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# SOME PROBLEMS IN DIABETES MELLITUS

A. GORMAN HILLS, M. D.

In medicine, as doubtless also in life, our successes may themselves be the cause that new problems appear, demanding in their turn a new and different solution. The problems in diabetes mellitus to which my title refers are those arising in connection with two therapeutic successes — insulin and the oral hypoglycemic agents. The discovery of insulin and its development for therapeutic use in diabetes mellitus by Banting and Best 38 years ago must always remain the outstanding accomplishment in man's war against this disease, and indeed for a decade or more it appeared that insulin therapy, especially with the aid of depot preparations, had put an end to the serious consequences of the disease, except insofar as tragic losses of life or health occurred during the at least theoretically avoidable acute complications, ketoacidosis and insulin shock. Today these acute complications are completely overshadowed as a cause of disability and death in diabetes by its chronic complications, especially atheromatous and other disease of the large and small blood vessels. These sequelae generally become fully developed only after many years of diabetes, whereas the disease was not, before the insulin era, very frequently compatible with prolonged survival, so that in this sense we may say that insulin, by allowing the diabetic to survive for many years, has resulted in our being now presented with a new and major challenge in preventive medicine.

In the past three years there have been developed and tested a number of compounds which are capable, when taken orally, of controlling the hyperglycemia and glycosuria of certain diabetics. The problem presented by these agents is of a rather different kind, and is in a different stage of development, from the problems arising in consequences of the discovery of insulin, and centers, I think, about the questions of how these drugs exert their blood-sugar-lowering action, and of when and to whom they should be administered. I shall consider these questions initially, returning afterwards to the subject of the chronic vascular complications of diabetes.

The oral hypoglycemic compounds which have received most attention, and the only ones available to practitioners, are the aryl sulfonylureas, and I shall therefore confine my discussion of orally active compounds to this group and their close relatives. Figure 1 shows the structural formulas of the two sulfonylureas released so far for general use, tolbutamide and chlorpropamide.* These compounds have many other relatives which have similar physiologic activity, especially the series produced by slight modifications of the alkyl side-chain. The thiodiazols, which were the compounds originally found to have hypoglycemic activity fifteen years ago by Loubatières[1] are also very close chemical relatives; there is little doubt that all these compounds exert their hypoglycemic effect by

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CHEMISTRY OF ORAL HYPOGLYCEMIC AGENTS

| (ARYL) | 1. THIODIAZOLS | (ALKYL)** | Name |
|---|---|---|---|
| $H_2N$ | | | 2254RP |
| 2. SULFONYLUREAS | | | |
| *$H_3C$ | | $-(CH_2)_3CH_3$ | TOLBUTAMIDE |
| Cl | | $-(CH_2)_2CH_3$ | CHLORPROPAMIDE |

*Methyl group of tolbutamide oxidized in metabolism to carboxyl
**Substitution of other 3- or 4- carbon straight or branched alkyl groups has little effect on activity.

*FIGURE 1*

similar mechanisms. One additional chemical feature of these drugs is noteworthy: the chlorine atom in chlorpropamide prevents metabolic alteration of the drug in the body, whereas the methyl group in tolbutamide is readily oxidized to a carboxyl group, with resulting loss of activity in the compound.[2]

Dr. William A. Abelove and I have summarized elsewhere our early clinical experience with chlorpropamide, which consisted of observations of 49 diabetic patients treated over a period of two to five months with the drug.[3] As far as the type of patient who will respond to oral therapy is concerned, chlorpropamide and tolbutamide appear to behave very similarly. The principal clinical difference between the two compounds stems from the fact that chlorpropamide is not degraded in the body, but is eliminated only by excretion unchanged in the urine; as a result, administered chlorpropamide has a much longer biological half-life than tolbutamide. This means that the duration of effectiveness of a single dose is much greater, and that the maintenance dose of chlorpropamide for attaining effective blood levels of drug is only about one-fifth that of tolbutamide. When therapy is instituted at the maintenance level, five days may be required for full effectiveness to become manifest in terms of blood and urine sugar levels, so that insulin, if being given, should be gradually withdrawn as the drug is started; similarly, escape from control on chlorpropamide is often delayed for as much as a week after stopping therapy. This slower turnover has the disadvantage that when toxicity develops it will take longer to rid the body of the drug, but on the other hand permits once daily or even once every other day scheduling of medication. For maintenance, 200 mgm. of chlorpropamide or 1 Gm. of tolbutamide are comparable and represent average effective doses for patients who will respond to the drugs; in our opinion 2 to 2½ times these quantities should be the maximum prescribed.

It is important to establish the mechanism of action of a drug offering promise of providing an oral substitute for insulin under certain circumstances in diabetes; for mere lowering of the blood sugar is not necessarily beneficial in itself. Hypoglycemia can result from toxic effects upon the liver or upon those endocrine organs which secrete hormones tending to raise the blood sugar, and such effects might be far from beneficial, even though hyperglycemia is reduced. For this reason, there has been intensive investigation of the pharmacology of the sulfonylureas during the past three years. I believe that, as a result, it is now established that these drugs exert their effects principally by stimulating the secretion of insulin by the beta cells of the pancreatic islets.

In order to consider the clinical evidence, it will be necessary to recall that diabetes mellitus commonly occurs in man in two different forms.[4] Generally speaking, we may say that in the less common variety, principally developing in children and in young adults, the disease begins abruptly with the classical manifestations of increased fluid exchange, increased food intake, and weight loss; insulin is required in substantial amounts at all times to prevent ketosis; and the patient is "insulin-sensitive" and hard to regulate closely without precipitating insulin reactions. The more common type of the disease begins insidiously later in life; diagnosis is often delayed or made incidentally, owing to the relative mildness of the metabolic disorder; stable regulation with insulin is much more readily obtainable; and ketosis generally does not result from mere

withdrawal of insulin, though it is precipitated by infections and stresses. The clinical evidence suggests that the severe juvenile type represents virtually total loss of function of the pancreatic beta cells, whereas in the maturity-onset type of diabetes the beta cells, though functionally impaired, still retain considerable power to elaborate insulin; and this supposition has received strong experimental support, especially in the demonstration by Wrenshall and his collaborators[5] that extractable insulin is regularly absent from the pancreas in juvenile diabetes, but commonly present in diabetes of the maturity-onset type.

It is a striking clinical fact concerning the sulfonylureas, quite generally agreed upon by all who have studied these drugs, that they are without effect in the severe form of the disease which occurs in children and young adults, whereas they are effective in most cases of maturity-onset diabetes.[6, 7] Experimental evidence parallels this clinical consensus: the drugs will not lower the blood sugar of totally depancreatized animals, nor in *severe* alloxan diabetes;[8, 9] and they seem also not to be effective in depancreatized man.[10] From these facts we must conclude one of two things: either the drugs are beta-cytotropic, that is, they stimulate the secretion of insulin by the pancreatic beta cells, or else they require the presence of at least some amount of insulin in order to exert their hypoglycemic effects. It is true that a claim was made of histologic evidence that these drugs damaged the alpha cells of the pancreas, and it was suggested that they might prevent the secretion of glucagon, which is a blood-sugar-raising factor thought to be secreted by the alpha cells.[11, 12] This evidence, however, was not confirmed by the investigators,[13, 14, 15] and we do not know that glucagon secretion plays any physiologic role in maintenance of the blood sugar; as a result, the alpha cell hypothesis has been discarded.

The question whether the sulfonylureas stimulate the secretion of insulin or whether they merely require the presence of insulin in order to be active should be readily answered by determining whether the provision of insulin by injection renders the depancreatized animal or the severe childhood diabetic susceptible to the hypoglycemic effect of sulfonylureas. Although some effect of the drugs has several times been reported under these circumstances,[16, 17] it has generally been found by investigators of the subject that in both man and animals the presence of a physiological quantity of insulin does *not* permit the sulfonylureas to exert their hypoglycemic action.[6, 7] Thus it is almost impossible to avoid the conclusion that the principal activity of these compounds is the stimulation of insulin secretion by the pancreas. It should be noticed that this evidence is incompatible also with the hypothesis originally put forward by Mirsky and his associates[18] that the sulfonylureas increase the effectiveness of circulating insulin by preventing its breakdown by insulinase, the insulin-degrading enzyme or enzymes of the tissues. Other workers have also been unable to demonstrate that the sulfonylureas have any effect upon the rate of degradation of insulin labelled with radioactive iodine.[19]

Evidence obtained in other ways supports the belief that the sulfonylureas stimulate the secretion of insulin. Dulin and Johnson[20] have observed that the hypoglycemic action of these compounds is demonstrable in the hepatectomized animal, but not in the eviscerated animal in which the pancreas has also been removed. This work was instructive inasmuch as there was considerable evidence that these drugs affected the production of glucose by the liver, and these data had given rise to the belief that the sulfonylureas primarily affected the liver rather than the beta cells. Direct injection of the drugs into the vessels supplying the pancreas also appears to enhance the hypoglycemic effect of sulfonylureas,[21] and there is histologic evidence strongly suggestive of stimulation of the beta cells and, in rats, increase in their number under the influence of the sulfonylureas.[9]

There has been in the past much more reluctance to accept the beta-cytotropic action of the sulfonylureas than there is at the present time; this reluctance stemmed principally from two well-established and related kinds of evidence. On the one hand, the drugs were found beyond question to diminish hepatic glucose production in man[22-24] and animals[23, 25] while on the other hand it has been generally difficult or impossible to demonstrate

with them certain effects in the periphery indicative of accelerated glucose utilization which can generally be produced when insulin is injected into man or animal, namely increased difference between the concentrations of glucose in the artery and vein of an extremity[23] and increase in the concentration of pyruvate and lactate in the plasma.[23]

However, Butterfield, Fry and Holling[26] have emphasized the lack of validity of arteriovenous glucose concentration differences alone as a measure of abstraction of glucose from the blood stream by peripheral tissues. These investigators, combining such measurements in the arm of human subjects with simultaneous estimations of blood flow through the arm, concluded that the effect of the sulfonylureas is similar to that of insulin, in that both compounds lower the "threshold" arterial concentration at which glucose leaves the blood stream. Moreover, the sulfonylureas might act by stimulating insulin secretion yet not yield all effects demonstrable after peripheral injection of insulin. Madison and Unger[27] have recently compared the effects of 0.07 units of insulin injected into the portal vein of dogs with those obtained when the same amount of insulin is given into a peripheral vein. They have shown that while the blood-sugar-lowering effect is the same by both routes, the peripheral effect, as judged by arteriovenous sugar concentration difference, was less when the hormone is given into the portal vein. Their data imply that when insulin is administered in relatively small quantity in such a way as to simulate the conditions under which insulin is secreted by the pancreas, that is, so as to traverse the liver before reaching the general circulation, then a larger part of its hypoglycemic effect is ascribable to suppression of hepatic glucose output, and less to increased peripheral utilization of glucose. It follows that failure to duplicate with sulfonylureas the peripheral effects obtainable by injecting insulin peripherally does not contravene the view that the principal effect of the sulfonylureas is to stimulate secretion of insulin by the beta cells.

Of course modifications of our present concepts of the mode of action of the sulfonylureas may still take place; for example, it is possible that additional effects on the liver or other organs, or modifications in the susceptibility of the liver to insulin effects, may be demonstrable with these drugs, but I think we can take it for granted that the beta-cytotropic effect of these drugs is now firmly established as the principal cause of their hypoglycemic activity.

This is of course a reassuring conclusion as far as the long-term utility of these compounds is concerned, for it means that their hypoglycemic effect is truly a corrective for the disturbances of physiology of the diabetic state, and not a non-specific and possibly essentially toxic action. Toxic side-effects, however, occur undeniably, and as a group these compounds seem to be capable of damaging seriously and even fatally the bone marrow and the liver; we regard any evidence of an effect on these organs, as well as skin rashes, with suspicion as possible harbingers of serious toxicity, although this is certainly rare with both tolbutamide and chlorpropamide in proper dosage. Chronic side toxicity which might appear after years has also obviously not been ruled out, though it appears less and less likely to prove serious. Finally, the question must arise whether the stimulating effect of these drugs on insulin secretion is necessarily beneficial in the long run. Is it possible that this stimulation may ultimately tend to lead to complete exhaustion of the islet cells and a consequent conversion of stable diabetes into brittle diabetes? These questions are ones to which we cannot at present give a final answer, but they do not deserve on that account to be put out of mind.

What are the present indications for the use of these drugs? We believe that they should be used in a minority of diabetic patients. They have no place in the treatment of severe and juvenile diabetes, and give really gratifying regulation principally in those diabetics who require 20 units of insulin daily or less, and in them only in the absence of acute complications such as infections, acidosis, or operative procedures or other stresses. Moreover, it is such patients who in many instances can be adequately controlled without insulin or drugs if they will lose their overweight and adhere to a proper dietary regimen, as I shall

nortly emphasize. We do not think it wise to prescribe these drugs in lieu of proper dietary management, or to administer them to patients who have failed to cooperate in this respect, for this is only to abet the understandable inclination of the patient to be satisfied with less than optimal control with these convenient drugs, and therefore to invite the accelerated arrival of the chronic complications of diabetes. This leaves us with a group of patients with the maturity-onset type of disease—probably 20% or less of the total—who in spite of proper dietary management and good cooperation continue to require small amounts of insulin to achieve satisfactory control. It is in these patients that the sulfonylureas appear to be indicated, for here they permit the patient the pleasant alternative of a tablet instead of a daily injection, while often achieving as satisfactory normalization of the metabolism as can be achieved by insulin. There are, however, situations where the oral hypoglycemic agents, even though they may not be indicated according to the criteria above, nevertheless have a place in therapy, and indeed may be a real boon to doctor and patients; such situations arise especially in the case of the very elderly, of persons with poor vision who have no one available at home to adminster insulin, and in the case of severe allergy to insulin.

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I want to return now to a consideration of what will generally be agreed to be the outstanding problem in the management of diabetes mellitus today, namely the high incidence and premature development of atheromatous and other disease of the large and small blood vessels, which kills or maims by impairing especially the function of the heart, the brain, the extremities, the kidneys, and the eyes. The magnitude of the problem is underscored by the fact that vascular disease kills about 60% of all diabetics, twice the proportion of other persons who succumb to these disorders, and by the marked shortening of the life span of persons developing diabetes in childhood.[28]

Strong evidence supports the view that it is the chronic disturbance of fat metabolism characteristic of relative or absolute insulin lack which is principally responsible for the early development of severe change in the arteries of diabetics. The almost uniform and strikingly premature appearance of vascular disease in early middle life in diabetics who have first manifested their disease in childhood clearly relates the complications to the *duration* of the disease, and therefore can scarcely be accounted for except by regarding the vascular disease as an end-product of the disturbed metabolism; while collateral evidence, both clinical and experimental, leaves little doubt that elevated concentrations of certain fatty materials in the plasma constitute an incitement to the development of atheromatous disease.[29] Although all observers have not agreed, it appears more and more, despite an undoubted variable factor of individual vulnerability of the blood vessels, that the speed and intensity of vascular degeneration in diabetics, atheromatous and non-atheromatous alike, is directly correlated statistically with the degree to which the metabolic disorder has been neglected. But although optimum control can moderate and delay, it cannot obviate the development of vascular disease in the diabetic, for even among the best-controlled and most cooperative patients, the incidence of vascular disease is always higher after 15 or 20 years than among any comparable control group of non-diabetics.

I take it that this unfortunate fact results from the circumstances that it is quite impossible, even with the closest regulation which is at all practical, to afford more than a crude approximation, by periodic insulin injections in the diabetic, of the marvellously sensitive control of intermediary metabolism which is achieved by the pancreatic islets in their normal functioning. Delicately responsive to small changes in the blood sugar concentration, they function, in collaboration with other endocrine organs, to maintain a remarkable stability of the blood sugar level. We see this demonstrated over and over again in the glucose tolerance curves of normal persons, where ingestion within 15 minutes of a third or so of the total daily carbohydrate ration results in only moderate and very transient elevation above normal of the blood glucose concentration. I am sure that no diabetic requiring insulin has a 24-hour blood sugar curve as stable

as a normal person's; indeed spillage of no more than a trace of glucose once or twice during the day, which implies that blood sugars at least as high as the maximum elevation of a normal tolerance curve are occurring several times daily, would surely be considered highly satisfactory control in many diabetics. Yet whenever the blood sugar goes up even to this extent because of insulin lack, fat metabolism is disturbed. Serum triglycerides, non-esterified fatty acids, cholesterol and phospholipids are all increased in concentration in the plasma of poorly regulated diabetics,[30] and it appears that even quite temporary periods of insulin lack which result in transient hyperglycemia result also in a rise in the concentration of triglycerides[30] and non-esterified fatty acids[31] in the plasma. I do not think that refinement of dietary management or the development of any new types of insulin preparations can be expected to place in our hands the means of really achieving in the diabetic the degree of stability of blood sugar concentration and the attendant moderation of blood fat concentrations enjoyed by persons with intact islet cells.

In view of these considerations I doubt that in treating patients with established diabetes mellitus by intermittent injections of insulin we can hope to be wholly successful in eliminating the vascular complications in the most cooperative group of patients, and we will certainly be less successful in the less cooperative patients. It would seem that the only way we could eliminate these complications entirely would be to preserve adequate function and normal responsiveness of the pancreatic islet cells themselves—in other words, to prevent the development of diabetes. Certainly it would be immensely worthwhile if this could be accomplished in even a small percentage of patients.

I propose now to present a few selected observations exemplifying certain aspects of the natural history of diabetes mellitus which seem to raise the question whether we might not indeed be able to preserve islet cell function in certain patients, and so to attack the problem of vascular disease at its root. The patients to be presented have been observed by Dr. Janice Burr and myself in our clinic, and each is representative of a group of patients in the literature and in our material. Let me hasten to say that we have no answers to the principal questions which will be raised; but we do think that the answers are obtainable, and the questions of importance.

From the standpoint of the natural history of the disease, the maturity-onset type of diabetes is more interesting than the juvenile type. In the juvenile type, the metabolic fault develops rapidly and remissions rarely occur, so that essentially the natural history of this type of diabetes consists of the progressive development of the complications of the disease, with little change in the severity of the metabolic abnormality itself, except when severe nephropathy develops. A different story often unfolds in maturity-onset diabetes. It has beeen recognized for many years[4, 32] that the newly diagnosed, obese, middle-aged diabetic who will consent to have his weight reduced toward normal by caloric restriction will often be rewarded by diminution and disappearance of glycosuria, and may attain perfectly normal fasting blood sugars, and even normal glucose tolerance, by this means. Conversely, intercurrent infection or gain in body weight will rather regularly cause metabolic relapse.

A striking example of the benefit of reduction of overweight is afforded by the case of Mrs. F. P., a colored woman who was admitted to the Gynecology Service of Jackson Memorial Hospital in 1955 at the age of 60 years for a hysterectomy because of uterine myomata. At this time she was markedly obese, measuring 66 inches in height and weighing 242 pounds. The fasting blood sugar was 390 mg./100 ml. and the urine contained sugar and a trace of acetone; there was no acidosis. A diagnosis of diabetes mellitus was made, and the patient received insulin in doses ranging from 30 to 90 units daily throughout her hospital stay of 17 days, in spite of which constant glycosuria and intermittent mild acetonuria were present. Hysterectomy was performed on the sixth hospital day.

She was discharged on September 23, 1955 and thereafter followed in the Diabetic Clinic where she was given a low-calorie diabetic diet and 20 units of NPH insulin daily. At the end of one month her weight had been reduced from 242 to 234 pounds and in December 1955, at the end of three months, to 214 pounds. The dose of insulin was gradually reduced, and at the end of two months it was possible to discontinue insulin entirely. One urine specimen collected in the Clinic during December contained a trace of glucose, but after February 1956 there was no glyco-

uria and fasting blood sugars and two-hour postprandial blood sugars were repeatedly normal. There was slight elevation of the two-hour value of the glucose tolerance curve in December 1956, but one month later the entire curve was within normal limits, and remained so in September 1957 and March 1958; during this period her weight remained between 210 and 214 pounds (Figure 2). This, then, is a case of complete disappearance of the manifestations of diabetes mellitus over a three-month period coincident with reduction of 30 pounds of overweight, with a subsequent 2½ year follow-up period during which the glucose tolerance has remained completely unimpaired.

To my mind, this case history exemplifies an instance in which the accelerated vascular disease of diabetes is being wholly prevented, at least for the time. If we believe that the vascular complications result from the metabolic disorder, then I think we must believe that a persistantly normal glucose tolerance implies that the abnormal processes leading to the vascular complications have been wholly rectified; and if the normal tolerance can be maintained indefinitely, then the premature development of the complications can be indefinitely delayed. Not all newly diagnosed obese diabetics will have so gratifying a response to weight loss as this patient; but the case shows what can be accomplished in some instances, and underscores the importance of weight reduction in all obese diabetics.

What is the physiological explanation for this remarkable improvement? I find it impossible to imagine any plausible way in which weight loss could cause an increase in insulin secretion by the islet cells. On the other hand, there is every reason to suppose that the

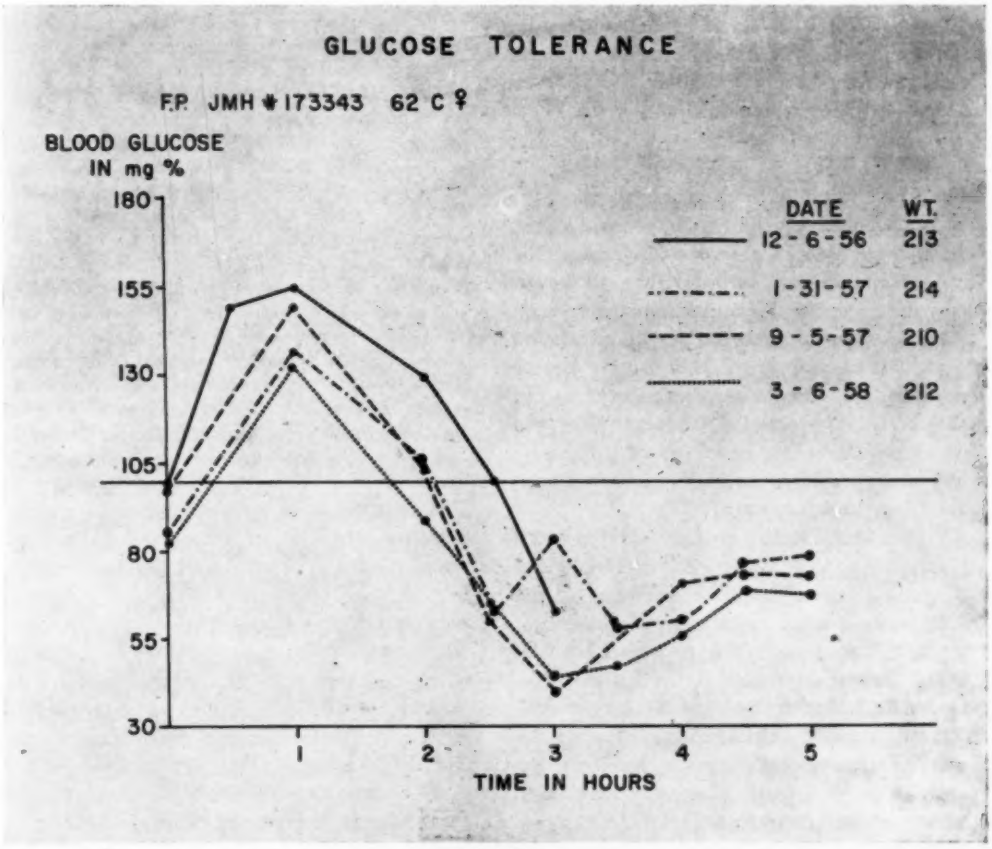


*FIGURE 2*

weight loss has diminished the need of the organism for insulin, so that the amount of insulin the islet cells are capable of secreting has become adequate to prevent diabetes, whereas formerly it was inadequate.

Doubtless there are a number of reasons why reduction of overweight reduces the requirement for insulin. A patient on a weight-reducing dietary regimen is on the equivalent of a high-fat diet, since a considerable portion of his caloric requirement comes from the oxidation of his own body fat stores; and there is evidence that the amount of insulin required and secreted is less on a high-fat diet than on an isocaloric high-fat diet: the tolerance to carbohydrate is impaired by prior fasting or consumption of a high-fat diet, and restored by carbohydrate feeding,[33, 34] while carbohydrate feeding stimulates insulin secretion.[35, 36] One may also suppose that in a person on caloric restriction the degree of ebb and flow of catabolism and anabolism in relation to the taking of large meals is much reduced, and that the outstanding direction of metabolic traffic throughout the day and night is the oxidation of fats; whereas we know from the work of Drury,[37] of Stetten and his collaborators,[38-40] and of Gurin and Brady,[41] that one of the principal functions for which insulin is required is the anabolic one of the synthesis of fat from carbohydrate. However, our patient shows that maximum long-term benefit, that is, accurate metabolic regulation by endogenous insulin secretion, may accrue for a period of years after therapeutic weight loss has been completed, that is, after the above considerations have ceased to apply; what is the explanation of the patient's continued metabolic normality?

Certainly total metabolism must be reduced when a 15% weight reduction is accomplished, and so the amount of work required of all the organs and tissues is presumably also reduced; but whether such marked improvement in islet function can be accounted for in this way may be open to question. Perhaps we should consider the possibility that reduction during the period of active weight loss of secretory demands on the pancreatic islets which had been in excess of their capacity was sufficient to permit the failing beta cells to recuperate to the point of acquiring considerable reserve. The next case to be presented raises this question more insistently.

Mrs. G. K. is a colored female who was 45 years old when first admitted to Jackson Memorial Hospital in May 1951 because of cellulitis of the vulva. On admission she was found to have more than 2% sugar in the urine, the fasting blood sugar was 264 mg./100 ml., the serum carbon dioxide content was 16 mEq./L., and the urine gave a 2+ test for acetone. The patient was given appropriate and successful treatment for her cellulitis, and received throughout her six-day hospital stay crystalline and long-acting insulin in an average total daily dose of 40 units, but in spite of this her urine continued to contain 0.2 to 1% of glucose throughout her hospital stay and gave a 1 to 3+ test for acetone for the first three days. After discharge, the patient was followed in the Diabetic Clinic and continued to take insulin in the form of protamine zinc insulin in amounts varying between 10 and 20 units daily. Her weight at the time of her initial hospital admission was 160 pounds and the variation in weight observed over the ensuing seven years was small, ranging between the extreme limits of 156 and 172 pounds. Until August 1952, the patient had a number of operative procedures including several revisions of a long-standing colostomy; since that time, however, her general health has been good. The patient tested her own urine regularly, and reported that small to moderate amounts of glucose were constantly present. However, the fasting blood sugar was determined on several occasions in early 1956 and found to be entirely normal, and the urine as tested in the Clinic in early 1956 was also consistently negative for glucose. For these reasons all insulin was discontinued in May 1956, and the patient has received no further insulin since that time. Throughout the remainder of 1956 and the first three-quarters of 1957 the patient exhibited mildly diabetic glucose tolerance curves, but in February 1958 and again in August 1958 the tolerance curves showed no impairment whatever of glucose tolerance (Figure 3). The patient has been free of overt intercurrent infections or other clinical stresses from 1953 on.

Here, then, is an instance of full-blown diabetes mellitus with ketonuria and mild acidosis developing in a setting of intercurrent infection, with impairment of glucose tolerance persisting for a period of fully six years thereafter, with subsequent complete disappearance of all manifestations of diabetes mellitus including impairment of glucose tolerance, the late normalization of the tolerance curve being completely inexplicable in terms of weight loss or the correction of prior infection. Similar cases have been reported by others.[42, 43]

Here again we seem to be dealing with pan-

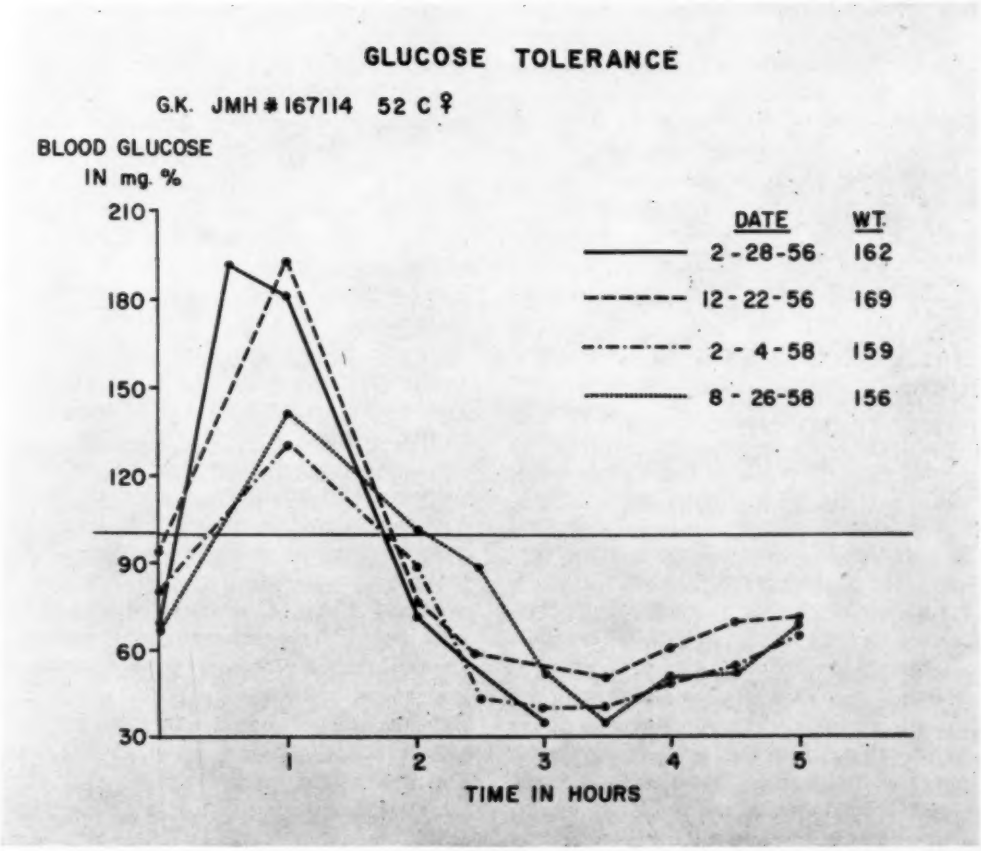


*FIGURE 3*

creatic islets of borderline reserve power. The initial episode of frank diabetes mellitus represented inability of the islets to provide enough insulin under circumstances of markedly increased insulin requirement; and after that episode of frank decompensation, it was possible to show by the glucose tolerance test that the islets had very little reserve for a period of six years. Yet ultimately, their functional capacity did improve to the point where we can no longer show evidence of limited reserve by means of the glucose tolerance test. Why did the islet cells recover in this way? I should like to suggest that the provision of insulin throughout five years of mild to subclinical diabetes might, by diminishing the requirement for endogenous insulin secretion, have permitted the islet cells to rest and recover some reserve function.

The possibility that insulin administration might under certain circumstances permit recovery of islet cell function in clinical diabetes is quite strongly suggested by data obtained by many investigators in the study of experimental diabetes in animals. Let us recall the circumstances of the production of so-called metahypophyseal diabetes, first accomplished by Young.[44] If a normal dog is given repeated injections of purified growth hormone (the demonstration was originally made with certain anterior pituitary extracts) hyperglycemia and glycosuria occur which can be ascribed to the direct effect of growth hormone itself on intermediary metabolism, principally to inhibition of glucose utilization. During the initial period of these injections, the output of insulin by the pancreas is increased fourfold, as shown by other experiments in diabetic

dogs maintained on exogenous insulin in various amounts during the injection of the growth hormone. At the same time hydropic degeneration of the islet cells appears, indicative of secretory overwork. If the injections of growth hormone are discontinued soon enough, the diabetic state is entirely reversible; but continued administration of the injections ultimately results in the development of diabetes which persists indefinitely after the injections are discontinued. At this time the islets of Langerhans are reduced in size and number, the beta cells are degenerated, the pancreas contains only traces of extractable insulin, and its capacity to secrete insulin is apparently greatly diminished or lost.

There are marked differences in the vulnerability to growth hormone injections of the islets of different animal species, but in general this variation only emphasizes that the production of *permanent* diabetes by the administration of growth hormone results from exhaustion of the islet cells. Rats, for example, are strikingly resistant to the production of metahypophyseal diabetes, and in this species the islets proliferate during growth hormone administration, and the extractable insulin content of the pancreas increases; apparently permanent diabetes is not produced in this species because the latent secretory capacity of the islets cannot be exceeded by this means.[45] There is also little doubt that the permanent diabetes which can be produced in rats by continued administration of adrenal cortical hormones, and which, as Buse and his colleagues succeeded in showing, can also be produced in cats,[46] is ascribable to exhaustion of the secretory capacity of the islets through overwork.

I do not, of course, mean to imply that the development of most cases of diabetes is at all related to excessive activity of other endocrine glands; cases of diabetes of this kind do occur clinically, but they are not the common type of diabetes mellitus. On the contrary, I should assume that in a patient such as the one whose case has just been presented, the primary fault is in the pancreas, the total functional capacity of the beta cells being originally low, presumably on a constitutional and genetic basis. However, it is quite certain that hyperglycemia is itself a potent stimulus to insulin secretion[35, 47]; and Dohan and Lukens[36] have demonstrated that maintenance in cats of chronic hyperglycemia by means of repeated injections of glucose will ultimately result in permanent diabetes mellitus with histologic evidence of severe damage to the beta cells. We can easily suppose that when a person with constitutional low islet cell reserve develops weight gain or an infection or stress which raises the insulin requirement sufficiently to exceed his islet cell reserve, the consequent hyperglycemia, abetted usually by the development of insulin resistance, constitutes a constant secretory stimulus during that period intense enough to cause further damage to the pancreas with increased impairment of islet function, so that diabetes continues after the stress is relieved.

From the point of view of our present considerations, experiments of particular interest are those of Lukens and his collaborators[48, 49] who were able to show that the metahypophyseal diabetes of cats is not necessarily permanent, and that recovery from this condition can be accomplished by the administration of insulin (or other measures which lower the blood sugar) or by reducing the caloric intake, but only if the therapy is instituted within three months. What I am suggesting is that the two cases presented today might constitute the clinical counterparts of these experimental demonstrations of the reversibility of pancreatic diabetes.

I should not like to push this suggestion too far. In spite of the fact that there is good evidence that most patients with chronic diabetes of the maturity-onset type do retain some capacity to secrete insulin, treatment with insulin in these patients seldom results in eventual disappearance of their requirement for exogenous insulin. It is clear enough, therefore, that the mere preservation of some capacity by human beta cells to secrete insulin does not imply their potentiality to recover normal secretory capacity and responsiveness. But it is undeniable that in certain patients with still less impairment of islet cell functional capacity —those in whom the impairment of carbohydrate tolerance is mild, or in whom frank diabetes has developed only recently, under

the provocation of weight gain, infection, or stress — normal islet cell responsiveness may certainly be regained and persist for indefinite periods of time under circumstances suggesting that resting the beta cells, by weight reduction (where indicated) or by administration of small amounts of insulin for varying periods of time, may be responsible.

The clinical evidence seems to indicate quite clearly that (as in the case of the experimental animals) the diabetic patients whose glucose tolerance curve may be made to revert to normal are in general those who have early pancreatic islet insufficiency and, except where stress precipitates frank diabetes, very mild disturbance of the metabolism. Assuming that there are at large a considerable number of persons who theoretically might have their impaired tolerance curves restored to normal by suitable management, it unfortunately still remains true that in many such persons the metabolic abnormality is so mild that it probably will not come to light at that early stage where there exists the best chance for restoration of normal tolerance. Diabetes is all too commonly first diagnosed in a middle-aged or elderly patient only after the vascular complications have already appeared;[50] indeed these may first permit the diagnosis to be made, as happens not uncommonly in the case of diabetic retinopathy. Thus it seems probable that if we are to hope to see a course of events like that in our second patient exemplified in any considerable number of patients, it will be necessary to identify patients having low borderline islet reserve before overt manifestations of diabetes mellitus have appeared.

The questions raised by these considerations seem to me to be the following ones: (1) How many persons are there at large in the country at this moment who have undisclosed borderline islet cell reserve or mild impairment of glucose tolerance? (2) What are the practical ways of identifying these persons? (3) Of this group, what proportion will respond to preventive measures by a restoration of normal glucose tolerance, as compared with similar untreated subjects, and in what proportion of them will the glucose tolerance remain normal indefinitely? (4) Can additional measures be developed to preserve islet cell function?

A good deal of information relative to the first two questions is available. A great many physicians, as well as public health agencies, have interested themselves in diabetes detection, and from their data we can be very sure that undetected borderline abnormality of carbohydrate metabolism is very common indeed. Conn, for example,[51] has reported that 20% of persons who have a relative with known diabetes are found when tested to have impaired glucose tolerance, which means that a mass screening program to detect early impairment of carbohydrate tolerance among relatives of known diabetics would be unusually efficient as a method for the detection of possibly preventable disease. Since we know that diabetes does sometimes develop in persons without a family history of the disease, there must be additional persons who in fact have undetected impairment of glucose tolerance, but we cannot say how many such persons there are.

We have already begun to consider the second question, namely how best to discover early pancreatic islet strain. Conn[51] has recently considered the subject under the title "The Prediabetic State In Man", and takes the position, to which we subscribe, that no meaningful line of distinction can be drawn, as far as pathogenesis is concerned, between overt and continued glycosuria on the one hand, and impairment of the standard glucose tolerance test, as well as certain other manifestations which we can recognize as "prediabetic". One such manifestation of especial interest, in that it takes us back earlier than any other clinical finding into the life history of pancreatic islet insufficiency, is the occurrence of large babies in the patient's history or in the family, unexplained maternal and fetal disorders in the obstetrical history, and the development of temporarily impaired glucose tolerance during the course of successive pregnancies. It has been realized for many years[52-54] that diabetes ultimately may be expected to develop in such women, though the glucose tolerance may repeatedly be restored to normal following the pregnancies. Such patients, who can be detected by routine glucose tolerance tests during pregnancy or early in the puerperium, constitute a well-de-

fined group of early prediabetics in whom one could evaluate, by follow-up with adequate controls, the effectiveness of measures designed to protect the pancreas.

Another clinical manifestation which may lead to the suspicion of impending failure of islet cell function is the appearance of hypoglycemic symptoms resembling those of functional hypoglycemia. The history of Mrs. E. A., a patient of our Clinic, may serve as an illustration.

The patient was a white woman first seen in our Diabetic Clinic in November 1957 at the age of 55, having been referred from Arthritis Clinic because of a history of diabetes mellitus. The diagnosis of diabetes was made in another city in September 1956 on the basis of glycosuria and hyperglycemia. The patient was given a prescription for a low calorie diabetic diet, to which she adhered, and she had lost 30 pounds over the ensuing year. She had received some cortisone therapy because of rheumatoid arthritis, but only during the two months of August and September of 1957.

When first seen in the Clinic she was a slender, 93 pound woman with no family history of diabetes. Her principal complaints had been weakness and headaches coming on at approximately ten o'clock in the morning and again at four o'clock in the afternoon, the complaints being relieved by the next meal. A glucose tolerance test was performed on November 26, 1957 and repeated on June 5, 1958. These curves were similar and showed impairment of tolerance in the one and two-hour values, whereas abnormally low values (43 and 35 mg/100 ml.) occurred quite late (4 and 4½ hours) (Figure 4); in functional hypoglycemia the hypoglycemic phase occurs earlier.

Hypoglycemic symptoms in persons with glucose tolerance curves of this type have been observed by a number of authors over many years.[55-65] Seltzer, Fajans and Conn[64] interpret this kind of tolerance curve as reflecting a delayed but ultimately quantitatively normal response of the pancreatic islets to the stimulus of rising blood sugar. It is important that half-hour values as well as hour values be obtained after the third hour, and that the test be carried out to five hours, if the existence of this abnormality is not to be overlooked, and, as in all glucose tolerance curves, standard dietary preparation is required. This type of curve has been observed in some instances to progress to frank impairment of tolerance without the late hypoglycemia and on to overt diabetes[64, 66] and it has in fact been suggested[55, 56, 60] that the history often obtained of weight gain prior to the developemnt of overt diabetes may be precipitated by hypoglycemic symptoms much more commonly than is generally supposed. How often patients with hypoglycemic symptoms and tolerance curves of this type become frankly diabetic and whether normal tolerance can often be restored are unanswered and controversial questions; Fabrykant[60, 61, 65] believes that in most instances such curves are not indicative of diabetes mellitus at all, but represent some other condition capable of affecting carbohydrate metabolism. They may certainly be encountered in renal glycosuria, especially after carbohydrate restriction, the early impairment of tolerance being apparently ascribable to the scant representation of dietary carbohydrate in the metabolic mixture.[33, 67]

Finally I should like to draw special attention to a phenomenon which every clinician encounters from time to time, namely the very transient appearance of glycosuria or hyperglycemia during the course of a severe illness, such as myocardial infarction, meningitis or other infections, or in other acute conditions. Not infrequently, such patients are observed after their acute illness to exhibit normal glucose tolerance; often this is considered to exclude diabetes mellitus and the question of insufficiency of the pancreatic islet cells is dismissed. We would hold on the contrary that such persons should be considered possibly or probably prediabetic, and that they should be subjected to the closest scrutiny with periodically repeated glucose tolerance tests for the rest of their lives, for it is precisely in such patients that we may hope, with the aid of such observations, to test and to develop means of preserving islet-cell responsiveness.

There is need for more information concerning the natural history of these mild and early disturbances of carbohydrate metabolism. There seems to have been published only one long-term study of this nature, that of John.[68] From this remarkable report of 55 such patients followed for as long as 25 years, we can be sure that an episode of metabolic decompensation is not necessarily incompatible with many subsequent years of life without overt disorder of carbohydrate

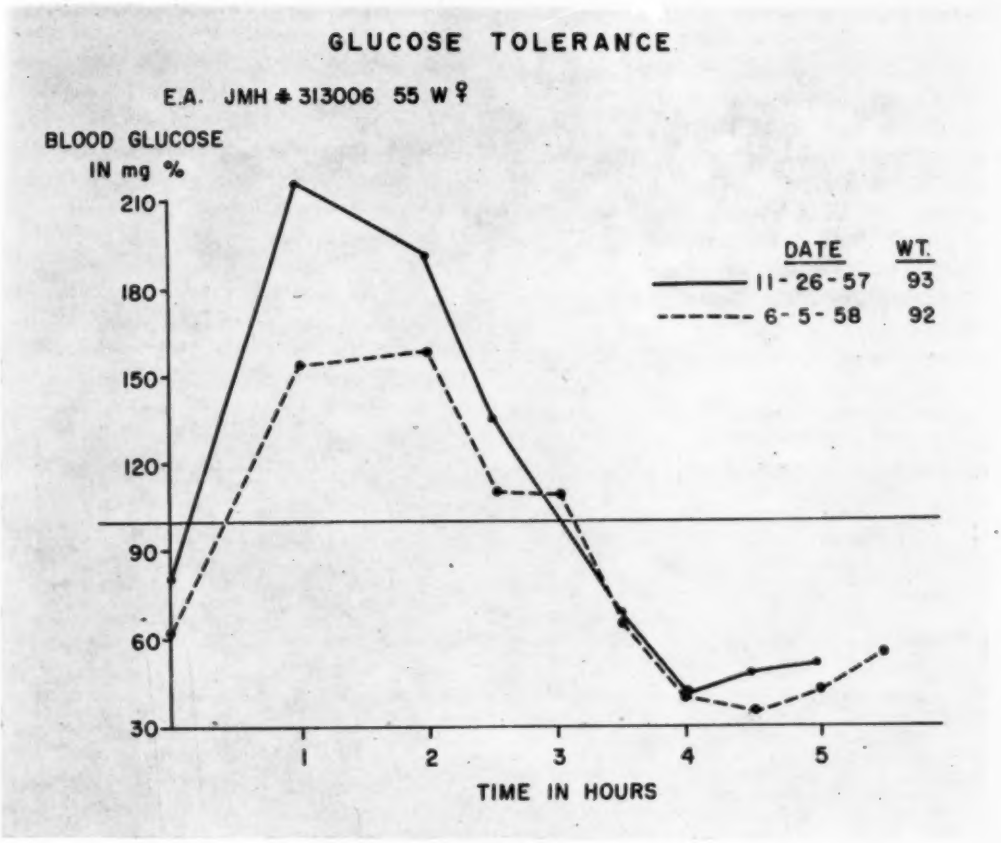


*FIGURE 4*

metabolism, though 60% of the patients studied did ultimately develop florid diabetes. Additional information is certainly obtainable in such patients by the use of repeated glucose tolerance tests and by special tests such as the cortisone-glucose tolerance test;[51] and long-term and detailed studies of this nature are in progress in at least one group of prediabetic subjects, those showing impaired carbohydrate tolerance during pregnancy.[69] The time would seem ripe also to institute long-term controlled studies of the effectiveness, as diabetes prevention in such subjects, of measures like weight reduction or insulin administration, or of other measures of sparing islet cell function which developments in the future may put into our hands. I am thinking here of the evidence indicating that a variety of agents — growth hormone, prolactin, and ACTH[44] as well as the aryl sulfonylureas themselves[9] may, under certain conditions, actually stimulate beta cell proliferation in some species. In our Clinic we are interested in trying to determine whether the chronic administration of small quantities of insulin actually can provide a practical means of preserving pancreatic islet function in this group of patients; but we do not have, and will not have for a long time, evidence which will permit us to arrive at an answer to the question. A widespread interest in the prediabetic state will do more than anything else to provide an early answer.

*Summary*

One can observe florid diabetes mellitus of recent onset to regress completely on occasion — commonly with reduction of overweight, but sometimes in patients on insulin therapy *not* as a consequence of weight loss or the

elimination of overt infection. The clinical observations suggest that such cases may be the clinical counterpart of the experimental diabetes produced by exhaustion of the islet cells, which has been shown under certain circumstances to be reversible by weight loss and by insulin administration, apparently as a result of "resting" the pancreas. Clinical restoration of normal islet cell responsiveness appears to occur only when islet cell failure is very mild or very early; it is suggested that the detection of such cases, which are numerous, and documentation of their natural history, is an important work in which all physicians can participate. Such cases are to be sought especially among relatives of diabetics, in persons with a personal or family history of large babies and excessive obstetrical mishaps, in persons showing transient glycosuria or hyperglycemia even though their glucose tolerance subsequently becomes normal, and in persons with symptoms suggestive of functional hypoglycemia. It is suggested that restoration of islet cell responsiveness may offer us our best chance to prevent the vascular complications of diabetes. It is recalled that the problem of the prevention of vascular disease in diabetes has largely arisen out of the great achievement of insulin therapy, and some problems now arising as a result a new therapeutic achievement, the oral hypoglycemic agents, have also been outlined.

*Tolbutamide is marketed by the Upjohn Company as Orinase®, chlorpropamide by Charles Pfizer and Company as Diabinese®.

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# GASTRO-INTESTINAL TRICHOBEZOAR

## REPORT OF A CASE WITH INTESTINAL OBSTRUCTION SECONDARY TO JEJUNAL INTUSSUSCEPTION

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### *Introduction*

Trichobezoars of the gastro-intestinal tract are of sufficient rarity to warrant reporting of all cases, especially those with unusual complications.

Their introduction into the literature at intervals of time serves to both refresh and acquaint the readers with an entity which is easily diagnosed when suspected and readily removed surgically.

This case is that of a trichobezoar of the stomach, duodenum, and jejunum with intestinal obstruction secondary to an intussusception of the jejunum. A review of the literature has failed to reveal other cases of intussusception as a complication of this entity.

### *History*

Baudamant[1] in 1779 reported the first case of gastric hair ball. Schonborn[11] in 1883 presented the first report of a case of trichobezoar that was surgically removed. Extensive reviews of the literature have occurred from time to time. Butterworth[3] in 1909, Matas[9] in 1915, Davies[4] in 1921, Hart[6] in 1923, Maes[8] in 1928, Balfour and Good[2] in 1929, DeBakey and Ochsner[5] in 1939, Mullen[10] in 1957, Hoyt[7] in 1958. DeBakey and Ochsner in 1939 collected 171 cases of trichobezoar. Mullen in 1957 reviewed the literature and added another case and brought the total to 212 cases. Hoyt in 1958 collected 17 additional cases and added one of his own, making a total of 230 cases of trichobezoar of the stomach.

### *Case Report*

A 27 month old colored female admitted because of intermittent abdominal pain for four to six weeks prior to admission. This was associated with anorexia, weight loss of an undetermined amount, and constipation. She gave a history of ingestion of copious amounts of nylon cloth, rags, bristles, doll's hair, and wool rugs since she was able to crawl.

She had the onset, the day prior to admission, of cramping abdominal pain associated with nausea and vomiting.

Past history: A full term normal delivery, birth weight 6 pounds, 3 ounces. She walked at 9 months of age. The first teeth were at 7 months. Bladder and bowel control was obtained at 21 months. Her past illnesses included only occasional colds.

Family history: Mother 21 years old, living and well. Father 25 years old, living and well. One older sibling, age three, a male, in good health. This sibling gave no history of ingesting foreign material.

Physical examination: Temp. 99.8° F. Pulse 94. Respirations 22. The patient was a lethargic, moderately well-developed, and moderately well-nourished, alert colored female who appeared to have some evidence of recent weight loss but otherwise was in no distress. There was a sinus arrhythmia. The abdomen was moderately protuberant, and a firm, slightly movable, non-tender mass was palpable in the mid-epigastrium. Normal active peristalsis was present. The mass appeared to extend transversely across the upper quadrants of the abdomen.

Laboratory work: Hemoglobin 10 Gm. with a red blood count of 4.2 million. White blood count 12,850 with 78% polymorphonuclears, 2% non filamented cells, 20% lymphocytes, and 2% eosinophils. The stool showed 1+ occult blood, and was negative for ova and parasites. No hairs were seen in the stool specimen. Urinalysis was negative. Blood urea nitrogen 12 mg./100 ml. Intravenous pyelograms demonstrated good function bilaterally. Examination of the stomach with barium injected through a naso-gastric tube revealed a large, irregular filling defect in the body of the stomach, which appeared movable but was not miscible with the barium. (Figure #1). A small amount of barium entered the duodenal loop and jejunum where additional filling defects were noted. The defects in the duodenum and jejunum had the same mottled appearance as the mass in the stomach.

Hospital course: Despite naso-gastric suction and intravenous alimentation, the patient continued to have cramping abdominal pain and vomiting. A surgical consultation was obtained.

Physical examination at this time showed the child to be afebrile. She was moderately lethargic. The abdomen was protuberant but soft with hyperactive peristalsis and moderately high pitched bowel sounds. The mass was indefinitely palpable in the mid-epi-

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*FIGURE #1*

*Figure on the left is the pathological specimen consisting of a contiguous cast of the stomach, duodenum, and proximal jejunum.*

*Figure on the right is an upper gastro-intestinal x-ray film which reveals the gastric and jejunal bezoar.*

gastrium. There was slight tenderness to deep palpation in the epigastrium and left upper quadrant. On rectal examination the ampulla was empty and no masses were palpable.

Laparotomy was recommended and on August 30, 1958 under general endotracheal anesthesia, the patient underwent exploratory laparotomy through a left paramedian incision. There was approximately 50 ml. of yellow serous fluid in the peritoneal cavity. A palpable firm mass was noted in the distal two-thirds of the stomach, duodenum, and upper jejunum. The stomach was moderately dilated. The proximal jejunum was dilated and edematous and there was an approximately 14 cm. intussusception of the jejunum at the most distal portion of the jejunal bezoar.

The area was packed off well to prevent contamination of the peritoneal cavity. A transverse gastrotomy was performed, with incision of the mid-fundic portion of the stomach. Using gentle traction the entire cast of the stomach, duodenum, and jejunum was removed intact. The jejunal intussusception was reduced with gentle manipulation and was viable. The gastrotomy wound was then closed and an appendectomy performed.

The mass consisted of an extremely foul smelling contiguous cast of the stomach, duodenum, and jejunum. It was composed of hair, admixed with fibers, cloth, and string, agglutinated into a putty-like mass. (Figure #1). There was no ulceration of the gastric mucosa.

Her postoperative course was entirely benign. The sutures were removed on the seventh postoperative day and the patient discharged to her referring physician.

### *Discussion*

Trichobezoars of the gastro-intestinal tract occur almost exclusively in young girls. There is usually some mild personality derangement but only a small percentage of the cases have definite pathologic psychiatric problems. The diagnosis is established easily if suspected. The symptoms usually consist of intermittent abdominal pain, associated with nausea and vomiting, anorexia, weakness, weight loss, constipation, and occasionally diarrhea. A mass is frequently palpable in the upper part of the abdomen along with evidence of mild chronic malnutrition on physical examination. Gastric analysis and stool examination occasionally reveal strands of hair. A mild anemia and leucocytosis are often present.

Complications when they occur are those resulting from the bulk of the mass or secondary irritation. The mass interferes with the normal gastric activity. Inanition and physical exhaustion may result. The foreign body can mechanically obstruct the pyloric outlet, the duodenum, or the small bowel. DeBakey and Ochsner reported intestinal obstruction as a complication in 16% of the cases. The symptoms thus are usually those of high intestinal obstruction. The traumatic irritation of the foreign body can cause peptic ulceration, hemorrhage, or perforation with resultant generalized peritonitis.

The treatment after diagnosis is essentially surgical removal and psychiatric evaluation.

*Summary and Conclusions*

Trichobezoars of the gastro-intestinal tract are of sufficient rarity to warrant reporting of all cases. A case of trichobezoar of the stomach, duodenum, and jejunum with intestinal obstruction secondary to jejunal intussusception is reported. The diagnosis is usually easily made from the history of the ingestion of foreign material and hair and characteristic radiographic findings. Treatment is primarily surgical removal and psychiatric evaluation. An additional case of trichobezoar of the gastro-intestinal tract is added, making a total of 231 cases in the literature. This case also presents the unusual complication of intussusception of the jejunum, which has not been previously reported.

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# DIPHTHERITIC MYOCARDITIS

CLAUDE T. PREVOST, M. D.
Anderson, S. C.

In 1877[1] Sanne described the toxic effect of diphtheria on the circulation: "The adult may have a feeling of impending death and bids his friends goodbye. Respiration is rapid but on auscultation there are no abnormal murmurs. The pulse is small, irregular, and unequal; soon it becomes thready; it is slowed, it rarely exceeds 80 to 100 beats; more often it falls to 50 or 40 beats; in one case it did not beat over 26." This description undoubtedly included cases of myocarditis, some with heart block.

The following is a case report with myocarditis and recovery.

A seven year old white girl was seen at home on January 18, 1957 complaining of throat soreness, fever, and malaise of 3 days' duration. She had an oral temperature of 102.3° F. and "pseudomembrane" over both tonsils. She was given an injection of 600,000 units of penicillin intramuscularly, and started on sulfadiazine. By the following morning she appeared improved; the tonsillar membranes were about half their original size and the temperature was 99° F. Cultures and smears were taken. Smears were reported the same day as being highly suspicious of Corynebacterium diphtheriae, and the following afternoon January 20 a positive culture was reported. The patient was given 20,000 units of diphtheria antitoxin intramuscularly and advised to remain completely at bed rest. Improvement continued for a week when she began to complain of pain in the neck and chest; her temperature was again 102.3° F. Anorexia, nausea, vomiting, associated with weakness and slight shortness of breath progressed through January 29 when she was admitted to the Anderson Memorial Hospital.

Five days prior to onset of the patient's sickness a brother had "acute bronchitis" which responded to penicillin and sulfadiazine. He has remained well.

The patient was a well developed and nourished white child who appeared pale and languid. She was covered with warm perspiration. Rectal temperature was 102° F., blood pressure 106/76, mm. Hg. and respirations 32. Her eyes were sunken and when she was undisturbed had a fixed stare upward. The neck veins were distended. There was no nuchal rigidity, nor adenopathy. The lungs were resonant and clear anteriorly and laterally to percussion and auscultation. There were no cardiac shocks nor thrills. The heart was percussed 7.5 cm. left of the midsternal line in the 5th intercostal space, and the apex beat measured 2 cm. The heart tones were distant and of poor quality, with a gallop rhythm, untimed as to systole or diastole; the rate was 150, with a regular sinus tachycardia. There was a faint apical systolic murmur. The liver was felt 2 to 3 cm. below the costal margin. The spleen was not palpated.

The red-cell count was 3,100,000 cu/mm. and the hemoglobin 9.5 Gm. per 100 ml. The white-cell count was 8,650 cu./mm. with 69 per cent segmented cells, 3 per cent stab forms, 1 per cent eosinophils, 2 per cent monocytes, and 25 per cent lymphocytes. The Wintrobe sedimentation rate was 38 mm. in 1 hour; on February 2 was 30 mm.; and on February 11 was 19 mm. in 1 hour.

A roentgenogram of the thorax taken January 30 showed "considerable cardiac dilatation and basilar pattern of pulmonary congestion and decompensation." Another on February 5 showed "reduction in cardiac size to essentially normal and clearing of all the recent pulmonary vascular changes." See Figure 1.

An electrocardiogram of January 30, 1957 was normal except for: diminished voltage of the QRS complexes of limb leads I and III; slight elevation of $ST_1$; diminished voltage of the T-waves in limb leads I through III, and in AVL. By February 6 the voltage of the QRS complexes had returned to normal, but the T-waves were inverted in limb leads I and II, and in V-3 through V-6. These changes were still apparent in the record of March 8, but by May 6 all abnormal characteristics had returned to normal.

On January 30 the following medicine was begun and administered as described below:

(a) Prednisolone 10 mg. at onset and 5 mg. each 3 hours for eight times, then 5 mg. each 5 hours for five times, and 5 mg. each 6 hours for 10 days, and then 5 mg. each 12 hours for 14 days.

(b) Crystodigin .1 mg. each 1½ hours for six times; .1 mg. two times following day; .1 mg. the 3d day, February 1, 1957. No additional crystodigin.

(c) Mercuhydrin 1 ml. (meralluride sodium) intramuscularly January 30, and again January 31, 1957.

(d) Signemycin (oleandomycin and tetracycline) .25 gm. each 4 hours for twelve times, and then four times daily through February 5, and then each 12 hours for 14 days.

(e) Oxygen tent 10 liters per minute until February 2.

(f) Phenobarbital 30 mg. each 6 hours while awake until discharged home.

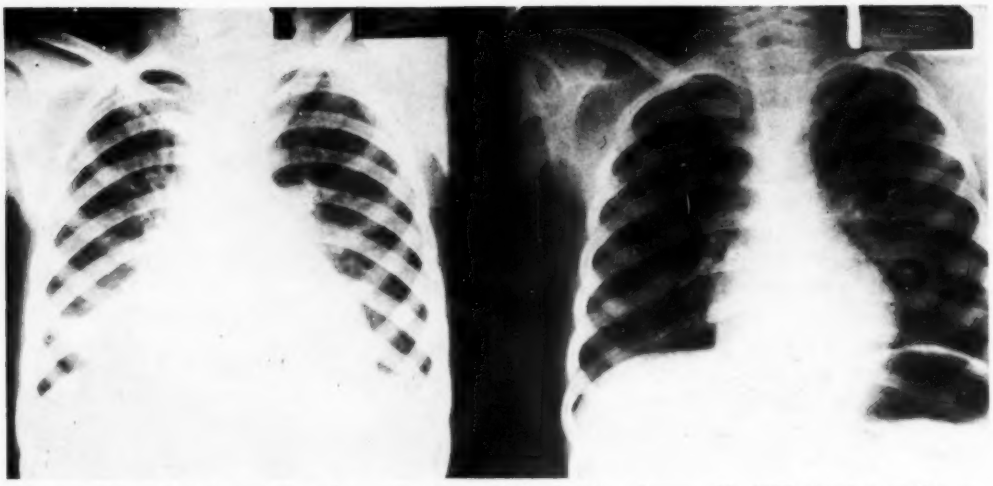

*Figure 1. Left: Posterior-anterior teleroentgenogram of thorax taken January 30, 1957 showing cardiac enlargement and basilar pulmonary congestion. Right: Posterior-anterior view of thorax taken February 5, 1957 showing reduction in heart size and clearing of pulmonary vascular changes.*

Her course had seemed downhill until some 6 hours after the institution of therapy when she appeared improved. Improvement was definite by 12 hours, as indicated by change in color, strength, heart tones, and a slowing of heart rate. Within 3 days the heart rate was 90 and the tones were normal except for a slight apical systolic murmur. By this time her general strength was better and respiration was normal even after the tent was removed. She was kept in bed during the remainder of the hospital stay and for an additional 2½ weeks at home, after which time she was allowed to sit up for progressive periods. Restricted though progressive activity was continued for 3 additional months.

Through the present time she seems normal in all respects, though a grade I high pitched systolic murmur remains.

### *Discussion*

Diphtheria is chiefly a toxemia with little invasion of the tissue by the organisms themselves,[2] although rarely intracardiac mural thrombi often containing C. diphtheriae organisms, or vegetative endocarditis may occur. Amklov et al[3] reported finding 17 fatal cases of diphtheritic endocarditis in the literature. Eleven of these had routine premortem blood cultures. They add one case of their own, with recovery.

Gore[4] in a careful analysis of the clinical and autopsy findings in 221 fatal cases of diphtheritic myocarditis stated that the largest proportion were not suspected as having myocarditis before death. In one-third of the patients the local lesion had resolved and fever had subsided for a variable interval prior to cardiac dysfunction. Three-fourths of the deaths occurred from 6 to 24 days after onset of diphtheria. Myocarditis was present in 70 per cent of those who died between the 6th and 24th day, and the average duration of an illness was 14 days. Some of the manifestations of cardiac dysfunction in 143 of these fatal cases were characterized as follows: shock (hypertension, weak thready pulse and imperceptible heart action) 51.4 per cent; cyanosis 38.9 per cent; congestive failure (venous distention, pulmonary edema, hydrothorax, and painful swollen liver) 34 per cent; tachycardia 32.6 per cent; dyspnea 22.2 per cent; substernal pain and oppression 11.1 per cent; arrhythmia 7.6 per cent; orthopnea 2.8 per cent; no manifestations in 6. 2 per cent.

Abnormalities in rhythm[5] frequently occur sometime during the second week. These may be characterized by auriculoventricular block, ectopic beats, or bundle branch block. During the third week sinus tachycardia, gallop rhythm, and cardiac enlargement occur and a significant drop in pulse pressure may be present, along with venous distention, breathlessness, and liver enlargement.

In a study[6] of 140 patients with diphtheria of whom all had electrocardiograms, 61 of 93

who had over 5 electrocardiograms had abnormal tracings. This study showed the desirability of performing electrocardiograms almost daily because changes were frequently transient and might occur within the first few days or not until after several weeks. Reversibility of the electrocardiographic changes could not be considered as indicating a return of the myocardium to normal. In one patient who died of pneumonia the electrocardiogram had returned to normal but at autopsy there was a severe degree of myocardial fibrosis.

The characteristics of the electrocardiographic changes could be separated into two groups:[7] T wave changes, and alterations in the conduction system. The majority of T wave changes occur between the 8th and 13th day. Early T wave changes are characterized by depression of the ST takeoff, with diminished T wave voltage. As the process advances the T waves become flatter and finally inverted. Improvement occurs in the reverse order of events.

Conduction changes occur most often from the 5th through the 13th day. The progression of auriculoventricular block to auriculoventricular dissociation is usually a grave sign, and a high percentage of these patients presented a terminal picture of ventricular tachycardia. The occurrence of interventricular block, or bundle branch block is somewhat less significant.

When death occurred at the end of the 1st week, Gore[4] found cloudy swelling, with interstitial edema and hyperplastic interstitial cells in clumps, usually without inflammatory cells. During the second week the muscle cells underwent segmental hyaline and granular degeneration, with attenuated, fragmented or ruptured muscle cells. As the process developed histiocytes increased in number along with some plasma cells and lymphocytes, by which time hyaline and granular degeneration was more extensive. By the third week myolysis, with some beginning hyperplasia of good remaining cells was evident. Reparative[8] changes began to some extent in the second week and were characterized by fibroblasts, granulation tissue, and young collagen fibers; well formed scars were sometimes quite well established after 3 weeks.

### *Conclusions*

In this case of toxic diphtheritic myocarditis response to treatment was rapid and seemed directly related to the use of prednisolone.

In an active infection the necessity for the use of antitoxin without delay is brought out. Some clinical findings, electrocardiographic and pathologic findings of changes in myocarditis due to C. diphtheria are discussed.

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# MEDICAL COLLEGE CLINICS

## THE MEDICAL COLLEGE OF SOUTH CAROLINA

### ELECTROCARDIOGRAM OF THE MONTH

### Paroxysmal Atrial Tachycardia with Block

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*Case Record*—A lady who for most of her 50 years had taken digitalis for rheumatic heart disease was found to again have active myocarditis. Her childhood and youth had been marked by recurrent attacks of rheumatic fever, followed in middle life by a decreasing cardiac reserve. But her symptoms of exertional dyspnea, orthopnea and dependent edema had been reasonably well controlled until two years prior to this admission when she had been hospitalized for subacute bacterial endocarditis. To add to her lot, diabetes mellitus and thrombocytopenic purpura had also been found at that time and treated with insulin and cortisone respectively. Following this she was observed during several episodes of cardiac arrhythmia, one described as a sustained tachycardia resulting in prolonged vascular collapse.

The significant auscultatory findings were accentuation of the pulmonic second heart sound, a loud and somewhat snapping first sound and a systolic murmur at the mitral area, and the long rumbling crescendo murmur during diastole, with presystolic attenuation, typical of mitral stenosis. Roentgenographic studies showed a moderate degree of cardiac enlargement, predominantly of the right ventricle and the left atrium.

Treatment consisted of a low sodium diet, insulin, and digitalis in the same average dosage which she had taken for many years. Subsequently cortisone was administered again for the control of purpura, after which her cardiac rhythm changed from a normal sinus one to that illustrated here. Digitalis was then withheld and the patient given potassium chloride on the assumption that her arrhythmia was a manifestation of digitalis toxicity. However, the arrhythmia persisted with, on at least one occasion, a very rapid pulse rate and deepening congestive heart failure. The electrocardiogram illustrated here is one of several recorded during the following month after resumption of digitalis, all showing paroxysmal atrial tachycardia with varying degrees of A-V block. At no time did the patient experience any of the usual symptoms of digitalis toxicity.

*Electrocardiogram*—The P waves are regular throughout at intervals of 0.35 sec., indicating an atrial rate of 172 per minute. Ventricular response is irregular, occurring every second, third or fourth atrial cycle, with P-R intervals ranging from about 0.10 to 0.22 sec. The P wave immediately following each ventricular response is superimposed on the T wave.

Amplitude of the QRS complexes is abnormally low—less than 5 mm. in all three standard leads. Neither T wave changes characteristic of "digitalis effect" nor ventricular ectopic beats were present in the complete twelve lead electrocardiogram.

*Discussion*—The clinical and electrocardiographic features of paroxysmal atrial tachycardia have already been discussed.[1] A particular type of this arrhythmia, commonly referred to as "P.A.T. with block", has the additional feature of atrioventricular block. Its recognition is of importance chiefly because most reported instances of it have been ascribed to digitalis toxicity.[2]

With or without block, the mechanism of paroxysmal tachycardia in the atria appears to be the same. At least both have a more or less regular repetitive atrial rate which is usually in the range of 150 to 200. The P waves tend to differ somewhat from those of a normal sinus rhythm because their origin is ectopic and, in contrast to atrial flutter, between them is some semblance of an isoelectric baseline when this is not obscured by other complexes. At the A-V node the block may be of the first, second or third degree types but commonly it is of varying degree, resulting in a varying P-R interval or ventricular response rate or both. Fortunately for this patient the block served as a protective mechanism allowing the ventricles to respond to only every second, third or fourth atrial activation. The episode of severe tachycardia during the period of digitalis withdrawal (and perhaps some of the previous ones with circulatory impairment) may have been due to loss of the protective block in the presence of paroxysmal atrial tachycardia.

Arrhythmias due to digitalis toxicity are being seen with increasing frequency. Probably there is an actual increase in their incidence, over and above that attributable to the greater number of electrocardiograms recorded or their more accurate interpretation, and some of the reasons for this have been brought to light by recent knowledge of the effect of potassium on the action of digitalis. An inverse relationship appears to exist between concentration of potassium ions within the muscle cell and the cell's vulnerability to digitalis. Generally, factors which lower intracellular potassium sensitize the cell to digitalis intoxication, and vice versa. There is evidence that congestive heart failure, ischemia, anoxia, edema, as well as the adrenal steroids and digitalis itself, are

onducive to loss of potassium from the muscle cell. Such losses may or may not be reflected in the serum (extracellular) K level. But from a practical standpoint, it is probably depletion of the body's potassium stores through the use of diuretics which accounts for most of the digitalis intoxications and arrhythmias which arise during treatment for congestive heart failure. Both mercurials and the newer oral diuretics augment renal excretion of potassium, and the resultant increase in myocardial irritability becomes especially pronounced when the intake of sodium is restricted. With manipulation of electrolytes by vigorous or continued diuretic therapy and salt restriction it is not uncommon for signs and symptoms of digitalis intoxication to make their appearance for the first time without any increase in the dosage of digitalis, for toxicity is not a function of the dosage alone. And conversely, digitalis-induced arrhythmias may be effectively suppressed by administration of potassium.

Both paroxysmal atrial tachycardia and atrioventricular block have multiple causes, including organic heart disease. In this patient's case the arrhythmia was more likely a manifestation of active rheumatic carditis than digitalis intoxication alone, as evidenced by absence of the usual symptoms and electrocardiographic signs of toxicity to the drug, failure of the arrhythmia to revert to normal when the drug was withheld and potassium administered, and its observed duration over a period of several weeks. Furthermore, the low voltage of all QRS complexes, especially in the face of known valvular disease and cardiac enlargement, bespeaks an organic basis for which the patient had abundant evidence. One wonders, however, whether the cortisone and salt deprivation might not have lowered the threshold of toxicity to digitalis.

The onset of P.A.T. with block in a patient receiving digitalis may indicate a near lethal level of the drug. Thus there is some urgency about determining whether the arrhythmia is or is not due to digitalis. If so, additional dosage (often used to abort ectopic atrial arrhythmias) would be extremely hazardous. Recognition of P.A.T. with block is therefore crucial in such cases, and commonly this requires careful scrutiny for transient Wenckebach periods or for blocked P waves concealed in QRS or T deflections to distinguish the arrhythmia from other tachycardias.

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## ABSTRACTS

*Fiberglas in the Eye.* Thomas R. Gaines, M. D., (Anderson) A. M. A. Arch. Ophth. 60:941-944, Nov. 1958.

A case of intraocular foreign body consisting of a filament of glass (Fiberglas) is reported, the foreign material having remained within the eye for a period of 3 years and 10 months.

Despite repeated slit lamp, gonioscopic, and ophthalmoscopic examinations the presence of a foreign body was not proven until more than five months had elapsed.

Without explanation, there were periods of quiescence alternated with periods of activity, one period of quiescence having lasted more than two years without symptoms, during which time the patient worked uninterruptedly.

During the final four months previous to the removal of the foreign body, activity in the eye was such that it was believed that the point of tolerance had been reached and that there was danger of loss of the affected eye, with possible involvement of its fellow.

Due to the small diameter, (about the size of 00000 gut), the length, (4.5 mm.), and the translucency, such material is not easily seen, thus making its surgical removal difficult and hazardous. One attempt by means of routine procedure including incision through the limbus into the anterior chamber with wide iridectomy and irrigation of the anterior chamber under a conjunctival flap was a failure. Fortunately, the second, three years later was successful. After removal of the foreign material the eye quickly became quiescent, with return of visual acuity to 20/20.

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*The Effectiveness of Dithiazanine Against Worm Infections in Mental Patients.* Martin D. Young, Sc.D., Geoffrey M. Jeffery, Sc.D., Joe E. Freed, M. D., and William G. Morehouse M. D. (Columbia) A. M. A. Arch. Neurol. and Psychiat. 80:785 (Dec. 1958)

Dithiazanine iodide (Delvex (R)) was tried against hookworm and *Trichuris* infections in mental patients. Eight hundred milligrams daily in divided doses were given for five days. Eighteen of 23 *Trichuris* infections were eliminated and the remaining five greatly reduced. The overall egg count was reduced by 98.9 per cent. None of the 27 hookworm infections was eliminated. The overall reduction of hookworm egg counts was 39.6 per cent.

Dithiazanine appears to be very useful against *Trichuris* infections in mental patients which, up until the present, have been difficult to eradicate.

# PRESIDENT'S PAGE

The honored ideals of the medical profession imply that the responsibilities of the physician extend not only to the individual, but also to society where these responsibilities deserve his interest and participation in activities which have the purpose of improving both the health and the well-being of the individual and the community.

The laity and the press are eager to learn all they can about the most recent advances in the cure of diseases that have so long baffled the efforts of men to cure. Likewise, all efforts toward betterment of community health and well-being are of especial interest in the public eye. The same can be said for civic enterprises entered into by medical men.

Each county medical society should constitute a publicity committee whose duty it would be to give to the daily press all accurate information on medical subjects of interest to the public. This should be done without mentioning names from whom this information comes, except in special instances. These instances are medical meetings having press coverage and any brilliant performance by any individual or group of individuals cleared through their local medical societies for publication. By adhering to these rules the difference between the reputable physician and the quack has been clearly defined.

It is the personal opinion of many physicians that public relations can be immeasurably improved by the activity of honest, clear thinking doctors taking part in various worthy civic enterprises. The use of the physician's name in connection with a civic project should not be considered contrary to the Principles of Medical Ethics.

R. L. Crawford, M. D.
President

# Editorials

## THE MEDICAL LETTER

From many quarters there comes the cry that we medical people are being bombarded with too much persuasive material from the pharmaceutical houses. Certainly we are more than delighted when a firm has a new product to offer and when it sends along with its announcement some adequate clinical estimate of the real virtue of the recent production. In many cases the claims made are quite moderate, and are based on well-founded research and clinical trial, but in other instances the enthusiasm seems to be somewhat premature and the recommendations somewhat broad in view of the limited trial of the new drug. It is true that we can search the current literature for confirmation of the claims which we read, and we have several official sources, such as those of the AMA, from which information may be had. However, the first is difficult for the busy practitioner, and the second may be somewhat slow because of the volume of demand upon it. It is undoubtedly and unfortunately true that many of us do not go to the trouble of seeking primary sources or impartial judgment, and are very much inclined to accept without question, or at least hopefully, the claims which the detail man or the brochure presents to us.

A new publication promises to help a great deal with our difficulties. *The Medical Letter* is a newcomer to the field of medical journalism, and aims to supply to its readers in a relatively brief form impartial and well considered estimates by most reputable medical authorities of the true value of drugs recently introduced. *The Letter* is literally a letter in length, and carries no advertising, and is a non-profit publication which is dependent on the fees of subscribers for its support. No doubt it will have some iconoclastic features, and also some confirmatory estimates of values which have not been entirely clear.

Obviously the value of such a publication must depend on the impeccable integrity of the people who produce it. There seems to be no doubt that the necessary qualities are established in its production, and if subsequent issues are as informative as was the first issue, it seems that we have an new and valuable addition to our therapeutic judgments.

## A FAT-FREE COOKING AID

Doctors who have occasion to prescribe low calorie or low fat diets should be interested in a new product which has recently appeared. This is a fat-free cooking aid which comes in a spray package which is very handy in administering the proper coating to the necessary utensils for cooking. Home experience with a sample has led us to believe that it is a useful material, and does all that the ordinary fat can do toward proper cooking. As a great many of our medical friends could do with a little less fat content, it might be worth their while to look into this method of eating your "fat" and not having it too.

## THE DISCIPLES OF FLORENCE NIGHTINGALE

Individually the nursing profession of today is composed largely of dedicated women, devoted to the care of the sick. The defects present are not of their own choosing. To conduct a training school eligible for accreditation is an expensive proposition. This financial consideration has caused many of the smaller hospitals to close their training schools. In those that continue, the costly budget of training is added to the bill of the unfortunate ill, who can least afford it. The intricacies of bedside nursing have been engulfed in the training of the student with the addition of supernumerary remotely related courses of instruction. Ethics and discipline have disappeared in the curriculum. The care of the patient is becoming incidental in the rush to meet the standards of education.

There must be some happy solution to this dilemma which has arisen in our sister profession. The nursing educators are striving for

full emancipation from doctor control and in their endeavors are placing the nurse further and further away from patient care. Reforms must be instituted on a national scale by the medical profession to bring back the graduate nurse's position of dignity so that she may render kind understanding to the sick and receive sufficient recompense to compare with industry. The national socialistic tendency is creeping into the training of student nurses and is furthered after graduation by job qualifications demanded for accreditation. It is up to us, the physicians, to put our finger in the dike and attempt to stem the tide.

*Worcester Medical News*

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## REPORT OF A DELEGATE TO THE AMA

The meeting of the American Medical Association held in Minneapolis, Minn., December 2 through the 6, 1958 was one devoted to listening to reports of the various Committees and Commissions that had, in some instances, been working on problems for periods of months and in many cases, years. One cannot realize the tremendous amount of effort that goes into the work of this House of Delegates. The speaker, Dr. Vincent Askey, and the Board of Trustees had done a tremendous amount of spadework before the House convened.

The reports of the Commissions and Committees had been sent to the Delegates before they arrived in the convention city. The Reference Committee had been appointed and a great deal of the subject matter, to be considered, had already been assigned to the Reference Committee for hearings. Among the reports, probably the hottest, was that of the Medical Care Plans, which was referred to the Reference Committee on Legislation and Insurance. This report related to the relationship of the Third Party in the provision and financing of Medical Care. There had been a great deal of work made of this subject and particularly was it a touchy matter in the coalmining states where they have been dealing with Third Parties for quite a while.

Another matter that had been studied for sometime by the Commission on Medical Care was the coverage of the "Senior Citizen" by some form of insurance. This matter involves medical care for the sixty-five year old and older peoples. It was brought out that in many states the Blue Plans are protecting these older people but it is not universal and some steps must be taken to see that they do get help and it was very forcefully called to our attention that the medical profession should lead the way. Various plans are being considered, one of which is that medical fees should be lower for this class of persons than for others. This Commission on Medical service has, over the years, studied such phases as: (1) Insurance and Prepayment Plans; (2) Health Program for Older Citizens; (3) many studies in the Processes of Aging; (4) Nursing Homes; (5) Federal Medical Services; (6) Veteran Medical Care Plans; (7) Medical Care of Civil Service Employees; (8) Workmen's Compensation; (9) Indigent Care; (10) and the Cost of Medical Care. A number of meetings and many miles of travel have gone into the preparation of this Commission.

Another Commission of the AMA that has done yeoman's work is the Commission on the Study of Medical Care Plans. This Commission analyzed many, many plans that were serving millions of people. They also considered many of the Blue Plans in the various states.

The report of the Board of Trustees is voluminous. This work goes on throughout the year and many matters pertaining to medicine are processed by this body. It is a credit to this state that we have one of our members of the Board, Dr. Julian Price, who is doing a magnificant job, and who is considered a most valuable member.

The president's address, delivered by Dr. Gunnar Gunderson, was very forthright and, in my opinion, left the thought with the Delegates that many questions, that have been under consideration by the AMA, should be studied thoroughly and action should be taken without the usual hedging that has been so often the case. To illustrate, I quote from his address: "In our relations with third parties we cannot deny the validity of criticism. We should welcome it, study it and learn from it. A critic of the schools is no more automatically an enemy of education than the music critic is an enemy of music. By the same token, a sincere critic of bad medicine can be the best kind of friend for *good* medicine. We should try to cultivate and convince those with whom we have differences. We also should appraise some of our own programs—among them, the effectiveness of our policing of that minority of physicians whose actions bring discredit and trouble to all of us.

"We need a clear, definitive policy regarding medicine's relations with so-called third parties. I hope that it will come out of the long-awaited report of the AMA Commission on Medical Care Plans, which will be considered by you at this session. This report, which urges a "judicious, tolerant and progressive attitude toward developments in the medical care field," deserves careful attention and thorough discussion by every delegate and interested party.

"To sum up my message today, I would emphasize that we must learn from the past, but we also must realize that we cannot turn back the clock. We can and must anticipate the needs of the future, without wrecking basic values and principles. We need be neither radical nor reactionary in our approach to our problems. Our course should be one of dynamic progress—in medicine and in our national life."

Another address that was most enlightening was that of the Governor of Minnesota, the Honorable Orville L. Freeman. I would like to quote from his address for I think it was very timely that we should have the opportunity to hear from the politician. The Governor stated in his address and, I quote: "The term 'socialized medicine' apparently means different things to different people. A simple answer as to its meaning might be the providing of medical care through some branch of government. Yet that definition is inadequate for our purpose, because we all take it for granted that government should provide medical care in certain cases,—as, for example, in tuberculosis and mental hospitals. We in the United States have asked for and have thoroughly accepted this principle for so long that I feel sure that the most ardent opponents of socialized medicine, by whatever definition, would not ask that government cease that function. Perhaps the term really refers only to the government assuming further functions over and above those which it now has. Or does it more specifically refer to action in which the elements of universality and compulsion are present?

"This confusion about the meaning of the term 'socialized medicine' is most unfortunate. The term in itself often arouses violent and sometimes emotional disagreement, among some who do not agree on what they are disagreeing about. Semantics, the science of words, then becomes almost as important as substance. We can lose sight of real problems and real issues in our confusion about the meaning of words. I often wonder whether a misunderstanding about the meanings of terms does not often create as much conflict and disagreement as is created by an actual difference in opinion and judgment.

"When government provided hospital and medical care for the victims of long, expensive, chronic ailments such as tuberculosis and mental illness, it did so for similar reasons. It was socially desirable that the people suffering from such ailments be given care and treatment. Very few could afford such long and expensive care. The people asked government to provide it, because that was the only way it could be made available.

"The same principles hold true, I believe, in all other areas where government performs functions relating to medicine. Government provides a substantial share of the cost of educating doctors because it is socially desirable and necessary. Government carries out those public health functions that could be performed adequately in no other way.

"Many Western European democracies have adopted universal health care programs with some degree of compulsory participation. Such programs are, I believe, what most of you think of when you use the term 'socialized medicine'. But we in the

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United States have greater resources and higher standards of income than any of these nations. And we have gone a long way in the development of voluntary programs using the insurance principle to make it easier for people to pay for their medical care. *If these programs meet the needs of the American people adequately, there will be no reason for government to be asked to step in.*

"*Personally, I do not want government to be any bigger than necessary.* I do not believe in compulsion except where it is essential to achieve a socially desirable goal. But where an essential goal can be achieved in no other way, under our American democratic system, government has in the past, and will in the future, be called upon to take care of urgent, unmet needs.

"Our goal in the field of medical care for the American people is one on which I am sure the medical profession and government are in total agreement. We want to insure the availability to all Americans of medical care of the best quality, and in sufficient quantity to meet their needs. We must cooperate to achieve this goal. We must work it out together.

"I want now to present to you one area in which the problems we face in working toward that goal urgently demand a solution. I want to ask your help in developing a program to meet, more adequately and efficiently, the medical care needs of our senior citizens.

"For the first time in the history of the United States the dependency ratio in our population is increasing. Up until 1940, those age groups in our population that are usually dependent on others, the young and the old, were steadily decreasing in proportion to those in the productive age group. Since that time, the trend has been reversed.

"To show specifically what this means:—we have tried to analyze the probable population changes expected in Minnesota from 1950 to 1965. As a whole, our population is expected to increase 22% during that 15-year period. But the increase will not be uniform in all age groups. Those under 21 will increase by 38%, and those over 65 by 35%, while the increase in the productive years between 21 and 65 will be only 9%. Thus, proportionately fewer people in the productive—and taxpaying—years will have to provide for greater educational services for increasing numbers of children and youth, and greater social and medical services for increasing number of the aging population.

"Thus, we face the problem of providing medical care for increasing numbers of older people. Government now is expected to provide such care for those who are on Old Age Assistance. In Minnesota we provide all Old Age Assistance recipients with medical care according to their needs, and we are one of the few states that place no ceiling on expenditures for such care. *These medical care costs are constantly increasing.* And while social security pensions are reducing the numbers of people who need old age assistance for ordinary living expenses, they are not sufficient to cover expenses of serious and chronic illness. Thus, there are increasing numbers of retired men and women who have earned pensions sufficient to meet their needs as *long as they stay well,* but insufficient to meet their *medical care needs.* If and when they become ill, those costs become an increased burden on government.

"Thus far private, voluntary insurance programs,—however rapidly they have grown as a whole,—are least effective for the age group over sixty-five. Employee group programs often cease with retirement, and premium costs for individuals of that age are generally too high for them to pay.

"It is because of this great need that legislation has been proposed in Washington,—and, no doubt, will be proposed again,—to expand the federal social security program to include hospital and medical insurance benefits under Old Age and Survivors' Insurance. It was introduced at the last session of Congress in the Forand Bill, which, *I believe, you officially and vigorously opposed.*

"Now, you certainly have the right to oppose such legislation if you believe it would be harmful to your profession. You have the duty to oppose it if you believe it would be harmful to the public. *But if you do oppose it you also have the responsibility of helping to work out an alternative program to meet the need that we all know exists and becomes more serious every day.*

"*A solution is urgently needed.* Our costs for medical care for the aging must compete with increasing demands for greater expenditures for education and for mental health, and for scores of other urgent demands. The burden on state government for increasing services is constantly getting heavier in every field. States are assuming a greater proportion of responsibility in non-defense spendings:—where in 1940 the states provided 58% and the federal government the other 42%, the states in 1956 were providing 73%. If state governments are going to meet this increased share of constantly growing responsibilities they need sound planning and wholehearted cooperation of all interested groups.

"I appeal, then, for your help in cooperating with government to develop a more *adequate program for medical care for the aging.* All of our people stand to benefit by a program that would relieve them of worry about insecurity and dependency in old age.

"We cannot retreat from our position of providing Old Age Assistance recipients with adequate, highest-quality medical care. We want to make sure that other senior citizens whose incomes are small, yet enough for independence as long as no extraordinary expenses are required, need not become "medical indigents" when they become ill. We want personal dignity as well as health for our later years.

"The proposal to include medical and hospital care

insurance under OASI benefits does offer one solution. It may not be a complete solution or the best solution. It may not be acceptable to you or to the Congress. But it would offer help to state governments,—hard pressed to find ways to meet all the needs for services for which they are responsible.

"I believe that, together, government and the medical profession can work out such a program.

"Can you help us to find a way to apply the voluntary health insurance principles to elderly and retired people? Can you help us to develop a program, that is within our means, to provide the kind of preventive care and attention that will make the sunset years healthier and happier? Can you help us find ways to make available to all who need it the kind of physical rehabilitation that your scientific progress has already developed?

"*We need this help and cooperation urgently.* The people feel this need, *and when they feel it badly enough, they demand that it be met.* The people then say, "there ought to be a law." *Yet the best solution is seldom reached in an atmosphere of urgent need or bitter controversy.*

"I believe that our best course in seeking the right answer is in sincere and wholehearted cooperation involving the medical profession and government as well as the people who need the services.

"*It is certain that we must find a solution, without further delay.* Certainly a Society with the great resources we have in both material goods and scientific talent cannot leave the health and happiness of our senior citizens to chance. I ask the help of the leaders of the *medical profession in working out a program that will most adequately meet the needs of our older citizens for health care and services of the highest quality. I know that government in the interest of the people must not—and cannot—avoid that responsibility.*"

There were some seventeen resolutions introduced. Among them were leaving the recognition of the osteopaths to the various states; the licensing of paramedical Groups, and Civil Defense matters.

The volume of the many matters brought before this House is such that a detailed account is almost an imposition upon the readers' time and especially since these accounts are published in the Journal of the AMA and a resumé in the Journal of the South Carolina Medical Association.

I would certainly advise every member to read and digest all this material, for the medical scene is a fast changing one and it behooves each and every doctor to become acquainted with this changing times and try to keep up.

For the members of the profession who think that the AMA is *not* doing anything about the many political issues that are being raised, I would invite your serious consideration of the *Proceedings of The House of Delegates of The American Medical Association, Minneapolis, Minn., December, 1958.*

Charles N. Wyatt, M. D.

*"WHERE'S THE PATIENT?"*

## STATEMENT ON GOVERNMENTAL SUPPORT OF MEDICAL RESEARCH

The Board of Directors of the Pharmaceutical Manufacturers Association believe that it is constructive at this time to state their views as to the support of medical research and education by the Federal Government. At their meeting in New York City, January 8, 1959, they therefore approved the following statement.

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In 1940, according to the Report of the Committee of Consultants to the Secretary of Health, Education, and Welfare, commonly known as the Bayne-Jones Report, the Federal Government contributed $3 million to medical research. In 1958 federal expenditure for medical research reached $227 million. (Data relating to the National Institutes of Health, September, 1958.)

The pressures upon the Congress and upon Federal agencies for *practical* results are apparent and unquestionably will increase in direct relation to the size of the expenditures. But as the Bayne-Jones Report states, "pressures for practical results cannot be allowed to supersede the kind of fundamental studies, which, over the long run, produce revolutions rather than merely improvements in health standards". In his communication of last July to President Eisenhower, Dr. Alan T. Waterman, Director of the National Science Foundation, makes a similar statement: "As history amply records, the most epoch-making scientific discoveries have come from basic research".

Some noteworthy basic research is being carried out in the laboratories of the pharmaceutical industry, but the major centers for this basic effort are non-

profit institutions, universities, medical schools and research institutions. The research and development work of our industry largely rests on this foundation. On the other hand, the pharmaceutical industry, with its $127 million expenditure in 1957, and at least $170 million in 1958, already does outstanding applied research and development leading to clinically useful products. After every advance in the laboratory and clinic, it has been the pharmaceutical industry which, with its own funds, has created the modern medicines which have benefited so many.

The present cancer chemotherapy program, involving an extensive series of contracts with pharmaceutical firms, should not be taken as a precedent for the attack on other disease categories. In the cancer field, the lack of leads after so many years of effort together with the nature of the problem, probably required a government subsidy to industry (devoted principally to an experimental mass screening program of all types of chemical agents) in order to supplement the basic research program being carried on in the laboratories of non-profit institutions.

In fields other than cancer, the pharmaceutical houses are pushing the search for new drugs with adequate funds and with every means at their disposal in the light of present knowledge. It is our basic knowledge that needs to be increased, as rapidly as possible, and Federal funds should be channeled to academic institutions, which need them to support and expand their basic research.

Moreover, in our total medical research activities the paramount problem is the critical shortage of scientific personnel. The extent of this personnel shortage is well documented: The Bayne-Jones Report indicated that 25,000 additional scientists will be needed by 1970, but that present training facilities will provide only 19,000. This is a deficit of more than 30 percent. A recent editorial in the J. A. M. A. (November 15, 1958) points out the alarming number of unfilled faculty positions in our medical schools even today.

Government subsidies for industrial research would still further accentuate this manpower problem. It must be recognized that there are only three ways by which a pharmaceutical firm can staff a government subsidized project. The first is to divert its own scientists from projects on which they are already working. The second is to obtain additional personnel from other firms, which results in a wasteful pattern of raiding. The third—easiest but most destructive—is to obtain the needed people from academic life, thus depleting still further the supply of teachers and scientists engaged in basic research.

In view of the current trend towards government-industry "crash programs" in electronics, aircraft and other fields of research, it may seem surprising for the pharmaceutical industry to urge that funds for medical research go mainly to academic institutions. For the reasons stated above, however, this Board believes that in the allocation of Federal funds for medical research—which as the Bayne-Jones Report states is inherently inseparable from medical education and training—the following principles should be adopted.

1. Since our further progress in medicine directly depends upon the supply of highly-qualified scientists, the training of additional teachers and research personnel should have highest priority.

2. Government funds should be principally allocated to basic research objectives, to expand our fundamental knowledge in all medical fields, rather than to applied research and development.

3. Except in unusual circumstances, government funds should therefore be allocated to non-profit institutions, such as medical schools, hospitals, and research institutions, rather than to private industry. Private industry should be subsidized only in cases where no non-profit organization can do the job. In such exceptional cases, however, full cooperation can be expected from a pharmaceutical firm approached by the Federal Government because of its unique qualifications.

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## NATIONAL ADVISORY COMMITTEE To The SELECTIVE SERVICE SYSTEM

### RESERVE STATUS

The National Committee has voted to notify medical schools and hospitals that if any of their staff or faculty are members of the Ready Reserve, they and the individuals concerned should make note of the fact that they will be expected to go when called and not be declared essential to the institutions at the time such a call is made.

If any such individuals are now in essential positions—either on faculty or staff—they should request transfer from the Ready Reserve to the Standby Reserve; otherwise the Ready Reserve is not a Ready Reserve.

By making such transfer they will, of course, lose pay. They will not lose credit toward retirement.

This should be looked into at the present time and straightened out now rather than waiting for an emergency to occur. In other words, it is essential for the medical schools and the hospitals to determine the military status of the members of their faculties and staffs. In that way and only that way will they realize what their loss would be on the day an emergency is declared.

This obligation of members of the Ready Reserve to serve when called also applies to physicians in private practice. Only in very exceptional cases would such individuals be given consideration for delay due to essentiality.

# BLUE CROSS . . . BLUE SHIELD

## HIGHER BENEFITS AND HOW TO COLLECT THEM

Recently, it was announced that Blue Cross and Blue Shield had increased some benefits, effective January 1, 1959. These were:

1. An increase of 1/8 or 12-1/2 per cent on the entire Blue Shield standard surgical contract.
2. An increase of the in-hospital medical fee allowance from the former 28 days per contract year to the new allowance of 70 days per illness.
3. An increase on a trial, administrative basis of the out-patient surgical care allowance and the emergency room care allowance from the former limits of $10.00 and $15.00 to the new unlimited allowance. This unlimited allowance is being tried on the supposition that a doctor may make use of hospital facilities in treating a Blue Cross-Blue Shield patient, without having to admit the patient to the hospital. This should save the doctors and patients time and money and should save Blue Cross the expense of paying for room and board charges which would be incurred were the patient to be admitted.

These benefit increases have been warmly received, but there are some who wish to know how to collect these additional Blue Shield fee allowances.

The procedure is quite simple. In the past you have multiplied the units shown beside a procedure in the manual by $2.00 to determine the amount Blue Shield will pay. Thus, an appendectomy having a unit value of 35, when multiplied by $2.00, would formerly have paid $70.00. Now under the new increased benefit schedule, all procedure units are multiplied by $2.25. The appendectomy is now paid for at the rate of 35 units x $2.25, which equals $78.75.

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## THE MONTH IN WASHINGTON

Washington, D. C.—Contrary to the usual procedure in a first session the 86th Congress this year already is getting on with its work, particularly in health fields. In past Congresses, not much is accomplished the first session, with most bills held over to the second, which always is an election year.

The session was only weeks old when action was under way. Here are some of the developments, portending enactment before adjournment of a number of bills:

1. After hearings, a subcommittee of the Senate Banking and Currency Committee reported favorably on a housing bill that contained provision for mortgage guarantees for proprietary nursing homes. Subsequently, the measure was passed by the Senate.

At this writing the House is at work on another housing bill that also contains the nursing home loan section. With House passage assumed, the question is whether the bill (containing more money than the White House wants spent) will be vetoed, and if vetoed whether it can be enacted anyway by two-thirds majorities in both houses.

2. Without bothering with hearings, the House Ways and Means Committee overwhelmingly approved the Keogh bill to encourage retirement plans for the self-employment. It acted in line with the committee's established procedure to quickly reapprove bills that passed the House the previous Congress, but not the Senate. The Keogh bill is identical with a measure that easily cleared the House last session but lost out in the Senate.

3. Driven forward by Chairman Carl Vinson of the House Armed Services Committee, legislation to extend the regular and doctor drafts four years rolled through the House. However, indications were the Senate would take its time and give careful consideration to the need for a four-year extension.

4. The Senate Labor and Welfare Committee, under the leadership of Chairman Lister Hill (D., Ala.), demonstrated its interest in legislation for the aged, Senator Hill named a subcommittee to make a full year's study of problems of the aged, taking in housing, employment and recreation, as well as medical aspects.

Chairman of this subcommittee is Senator Pat McNamara, Detroit Democrat. Other Democrats are Senators John Kennedy of Massachusetts, Joseph Clark of Pennsylvania and Jennings Randolph of West Virginia. Republicans are Senators Everett Dirksen of Illinois and Barry Goldwater of Arizona.

5. At the same time, three members of the standing health subcommittee of the Hill Committee, Senators Jacob K. Javits of New York, Clifford B. Case of New Jersey and John Sherman Cooper, all Republicans, asked Congress to authorize a two-year study of the health problems of the entire population. If approved by Congress, the investigation would look into the quality and quantity of health services, problems of extending health insurance, special problems of the aged and minority groups, and the distribution of health services.

Photo by E. S. Powell

**STATE BOARD OF MEDICAL EXAMINERS**

*(Standing, left to right): Dr. Wm. P. Turner, Greenwood; Dr. Harold S. Gilmore, Nichols; Dr. Roderick Macdonald, Rock Hill; Dr. A. Richard Johnston, St. George; Dr. Kirby D. Shealy, Columbia.*
*(Seated, left to right): Dr. Wilbur R. Tuten, Sr., V.-Pres., Fairfax; Dr. George R. Wilkinson, Pres., Greenville; Dr. Harold E. Jervey, Jr., Secretary, Columbia.*

## MEDICAL EXAMINERS

The State Board of Medical Examiners of South Carolina held its semiannual meeting in Columbia on December 9-10, 1958. Seven applicants were interviewed, their credentials checked, and they were registered for the examinations. Thirteen applicants for licensure by endorsement were licensed after they were interviewed and their credentials were checked.

After routine items of board business were handled, the President made a report of his recent meeting with the Council of the South Carolina Medical Association. He reported that Council expressed confidence in the manner in which the Board is handling and attempting to solve the problem of foreign medical graduates; also, Council's action in going on record as favoring the principle of biennial registration for physicians in South Carolina. The Secretary reported that he will work with the Chairman of the Committee on Legislation and Public Policy of the South Carolina Medical Association in drafting a resolution to be introduced from this Committee to the House of Delegates at its May meeting.

Hearings were held on seven physicians charged with violating the laws governing the practice of medicine in South Carolina. No licenses were revoked or suspended but several of the violators were placed on probation for varying periods of time.

# NEWS

### DR. TOM BROCKMAN

Dr. Tom Brockman, who practiced medicine in Greer for 23 years before moving to Greenville, recently had a much deserved tribute paid him for 49 years of service by the Greenville County Medical Society. Dr. Tom was born at Reidville and he stood fourth in his class of 42 at the Medical College of South Carolina where he graduated in 1909. He has served as president of the County, District and State Medical Association with distinction. The tribute says of Dr. Tom: "He was a leading citizen as well as a leading doctor. He was active in the affairs of his church and in all civic enterprises and was one of the most progressive mayors the town (Greer) ever had. So he became a great doctor, a fine citizen, a religious leader, a true humanitarian. He was recognized and accepted in each of these categories of human endeavor. Recognition gave rise to other demands for counsel—not in medicine alone, but in all the problems of life. He became a non-professional but wise and sympathetic listener and adviser. Perhaps in the capacity of counselor, when counselors, psychologists, psychiatrists, and capable ministers were unavailable, he gave his greatest service".

## DARLINGTON HAS NEW DOCTOR

Dr. Norman S. Richardson, Jr., a native of Darlington, has begun the general practice of medicine in Darlington in association with Dr. John M. Wilson.

Dr. Richardson was graduated from the Medical College of South Carolina in 1957, and before coming to Darlington he interned at the Columbia Hospital in Columbia.

He is a graduate of the St. John's High School in Darlington and of The Citadel.

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## DR. MANN TO BEGIN PRACTICE AT PICKENS

Dr. Robert G. Mann began the practice of general medicine in Pickens January 6, in association with Dr. Sydney A. Garrett.

Dr. Mann graduated at Pickens High School and attended North Greenville Junior College and graduated at Wofford and from the Medical College of South Carolina in 1956. Following his graduation he interned at Greenville General Hospital. For the past two years he has currently completed a tour of duty in the U. S. Air Force Medical Corps where he holds the rank of captain.

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## DR. LYNCH HEADS RESEARCH BOARD

Dr. Kenneth M. Lynch, president of the Medical College of South Carolina, has been elected chairman of the Scientific Advisory Board of the Tobacco Industry Research Committee.

Grants totalling $500,000 for scientific research were also announced by the Committee. One of these goes to Dr. H. R. Pratt-Thomas, professor of pathology at the Medical College.

Dr. Lynch, dean of the faculty and professor of pathology at the local college, has been a board member since its organization in 1954. He succeeds Dr. Clarence Cook Little who first was elected president in 1954.

The Scientific Advisory Board is responsible for research policy and programming for the Tobacco Industry Committee. Grants are made on recommendation of the board of independent scientists working in recognized universities, hospitals and other institutions.

Dr. Pratt-Thomas's renewal grant is for work in "application of a new bio-assay technique in examination of cigarette smoke and condensates for possible carcinogens (cancer elements)." He has been conducting similar studies for the past eight years.

## POLIO VACCINE

The House of Delegates of the American Medical Association on December 4, 1958 unanimously recommended that the following steps be taken in the poliomyelitis inoculation program:

(1) Each physician assume the responsibility for making certain whenever possible that all members of families he serves receive protection against poliomyelitis by having the three full doses of polio vaccine;

(2) State medical organizations arrange with state health departments for a joint effort to bring together county medical society representatives of county and city health departments for the purpose of discussing the need for joint study committees at the local level to survey the problems which may exist and to work jointly to solve them;

(3) County medical societies meet with county and local health department representatives to create study committees to survey the problem of immunization as it may exist in the local area and develop and implement a satisfactory program to meet the local situation.

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Paramedical groups have raised their educational sights too high, a hospital administrator stated in the February 1 issue of *Hospitals*, Journal of the American Hospital Association.

Nathan Bushnell, III, administrator of Franklin Memorial Hospital, Rocky Mount, Virginia, said the insistence on raising the standards of schools and the requirements for registration by national societies is prolonging the personnel shortages that the paramedical groups are trying to overcome.

Although it is understandable and commendable for groups such as occupational therapists to try to elevate the professional status of their members, he said, these groups should temporarily slow down and supply practical, immediate solutions to patient care problems.

"There are numerous aspects of every medical and paramedical field which can be efficiently handled by persons with minimum schooling or on-the-job training," Mr. Bushnell added.

He recommended that short-term training programs for practical assistants be developed in all the paramedical groups. Pointing out that numerous hospitals have resorted to this plan with excellent results, he urged the organizations to seize the initiative and expand the idea.

Mr. Bushnell advised the groups to encourage this type of training by establishing curriculum and providing basic textbooks. This would give prompt relief to personnel shortages, he added.

# ANNOUNCEMENTS

## FAMILY DOCTORS SCHEDULE SAN FRANCISCO MEETING

What does the "space age" mean to medicine? How do doctors treat bad burns? What's new in the realms of heart surgery, foot fractures, hypertension and diabetes? These and countless other questions will be answered at the American Academy of General Practice 11th Annual Scientific Assembly, April 6-9, in San Francisco's Civic Auditorium.

The scientific program will feature 28 prominent physician-authorities. More than 100 scientific and 300 technical exhibits will be prepared for the 7,000 doctors and guests expected to attend. The Academy is the nation's second largest medical association and the only American medical group organized strictly for family doctors.

Mac F. Cahal, executive director of the 25,000-member organization, says the 1959 scientific program offers an exciting and valuable postgraduate education opportunity for physicians.

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The Duke University Medical Center will have its Fourth Medical Cruise to the Caribbean, sailing from New York April 2, returning April 14; sailing from Wilmington, North Carolina April 4, returning April 13. Those interested should contact the Director of Postgraduate Medical Education, Duke University Medical Center.

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## SCPHA TO MEET IN CHARLESTON

Charleston has been named the site for the 1959 annual meeting of the South Carolina Public Health Association. The meeting will be held on May 7th through 9th with headquarters in the Francis Marion Hotel.

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The Association of American Physicians and Surgeons, a national organization representing the nation's physicians in medical economics, public relations, legislation and freedom, will hold its 16th Annual Meeting of the Assembly and Delegates at Fort Worth, Texas on April 2, 3 and 4, 1959.

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On April 9 The Southeastern Society of Neurology and Psychiatry will meet with the S. C. District Branch of the American Psychiatric Association. Fort Sumter Hotel, 6:30 P. M.

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The Tri-State Medical Association will hold its annual meeting in Winston-Salem, N. C., at the Robert E. Lee Hotel, March 16 and 17, 1959.

## 11TH INSTITUTE OF PSYCHIATRY AND NEUROLOGY APRIL 10 IN CHARLESTON

Dr. Stewart Wolf—Prof. Med. Univ. Okla.
"The As—If response as a pathogenic mechanism"
Dr. Paul Hoch—Commissioner of Mental Health, State of N. Y.
"Psychoneurotic Schizophrenia"
Dr. Charles Watkins—Prof. Psychiatry, L. S. U.
"Psychological factors concerned in breast mass in women"
Dr. Israel Ziverling—Assoc. Prof. of Psychiatry—Albert Einstein Col. of Med.
"Psychosomatic aspects of surgery"

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## SEMINAR ON THE VENEREAL DISEASES

Sponsored by:
South Carolina Chapter of the
American Academy of General Practice
South Carolina Medical Association
Columbia Medical Society
South Carolina State Board of Health

APRIL 13, 1959
HOTEL WADE HAMPTON
HOTEL COLUMBIA

1. The Seminar will be held in Columbia.
2. It will take a physician away from his practice only one afternoon and evening.
3. It has been approved by the A.A.G.P. for five hours credit, Category I.
4. From the standpoint of authoritative presentations, most of our speakers are on a national level. Particular reference is made to our guest speaker of the evening, Dr. Evan Thomas, who is certainly the leading authority in this country and is both nationally and internationally known.
5. The program is designed to be of greatest assistance primarily to the private practitioner of medicine.
6. There will be no tuition or registration fees.

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From Jessie Wilmore Murton:

"DOCTOR OUT"
(A Tribute)

The busy doctor whom we knew so well,
And took for granted—as the night, or day—
Has laid aside his stethoscope and lance,
And closed the office door . . . and gone away.

The multitudinous concerns of life—
The functions of the cell, and blood and breath—
Recede before a weightier problem now,
The ancient unsolved mystery of death.

Before this sudden new emergency
Which he cannot dismiss, nor yet delay,
The ready scalpel and the cunning hand
Lie unresponsive to his will, today.

The body, and its intricate affairs—
The myriad laws which compass it about—
No longer are of interest . . . On Life's door
Death's countersign reads briefly . . . *Doctor Out.*"

*J. A. M. A. Feb. 11, 1950*

# DEATHS

### DR. ORION T. FINKLEA

Dr. Orion Tiverton Finklea, 63, physician, civic and religious leader here, died February 7, after a brief illness at Florence.

He was stricken in the McLeod Infirmary with a heart attack while operating.

Dr. Finklea, a native of Hyman, was born November 11, 1895. He was a son of the late John B. and Martha Melissa Wise Finklea, pioneer citizens of Hyman.

Dr. Finklea received his premedical course at Furman University and later was graduated from the Medical College of South Carolina, in the class of 1918.

After graduation he served as a lieutenant in the U. S. Navy Medical Corps during World War I. In 1919 he came to Florence where he began his practice and became associated with the late Dr. F. H. McLeod and the McLeod Infirmary, of which he was a member of the staff. He was also a member of the staffs of the Saunders Memorial and Bruce hospitals. He served eight years as chairman of the Florence City School Board and two years as chairman of the South Carolina School Boards.

Dr. Finklea took post-graduate work in urology at the Johns Hopkins University and radiology at the University of Pennsylvania.

He was a member of the Florence County Medical Society; a member and past president of the Pee Dee Medical Assn.; a member of the South Carolina Medical Assn.; the Southeastern Section of American Urological Assn.; the American Urological Assn. and was a fellow of the American College of Surgeons.

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### DR. STEWART SHERARD

Dr. Stewart Baskin Sherard, 78, of 100 S. Granard Street, died January 1, 1959 at his home following two years of declining health and three months of serious illness.

Dr. Sherard was a native of Iva and had practiced medicine since 1905. He had practiced in Gaffney since 1908. He was a member of the Limestone Presbyterian Church and was past president of the Rotary Club. He was a Mason, Shriner and was past president of the Crust Breakers. He also was past president of the Cherokee County Medical Society and was a member of the South Carolina Medical Association. He was owner and operator of Cherokee County Hospital until he sold it to the county in 1935.

Dr. Sherard was a surgeon having graduated from medical school of the University of Maryland. He practiced medicine in Columbia for one year and at Iva for two years before coming to Gaffney.

### DR. C. D. SMITH

Dr. Charlie Dorn Smith, 73, died unexpectedly at his home near Turbeville of an apparent heart attack recently.

# BOOK REVIEWS

*THEORY AND PROBLEMS OF CHILD DEVELOPMENT*. David P. Ausubel, M. D., Grune and Stratton, New York, 1958, 650 pp., $11.75.

The author states that this book is intended as a reference work for educators, pediatricians, psychologists, psychiatrists, and social workers as well as an advanced textbook for graduate students in psychology. He deals with general principles underlying the regulation of development as a whole and more particularly with principles of personality development. An attempt has been made to incorporate empirical facts into a consistent and intergraded set of propositions which compose a substrate of developmental theory.

The progression of child development theory is first reviewed historically after which regulation of development and the nature of developmental processes are explored. Special chapters are devoted to prenatal and early development, personality development, and special aspects which include among others growth of intelligence and development of language.

An overview of general principles is provided in the first chapters and as more detailed information is introduced the previously presented concepts are reintroduced when they are relevant. This book deals with the basic sciences underlying child development problems but it does not make any attempt whatever to apply the principles to the practical problems of child rearing, child guidance, and etc.

This book should serve well its stated purpose of a reference source for specialists in child development but it will not meet the needs of the practitioner who seeks concise information relative to managment of behavior disorders.

Gilbert F. Young, M. D.

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*COUNTERFEIT-SEX; HOMOSEXUALITY, IMPOTENCE FRIGIDITY*. Edmund Bergler, M. D. 2nd Edition, 1958. New York, Grune & Stratton, Inc. $6.50.

This book is one that has to be studied to appreciate what the author has to offer—it cannot be read casually or piecemeal. For this reason, and the more important one that psychoanalytic orientation and acceptance is necessary, "Counterfeit-Sex" will have a limited appeal to general members of the medical profession.

After the preface to the Second Edition was read, this reviewer felt that the objective, scientific attitude was in question because of the amount of space

given to "anti-Kinsey" comments. Statements such as the following gave rise to this initial question: "In the years which have elapsed since its original publication, one of the manifestations of 'counterfeit-sex' has become increasingly prominent. This manifestation is homosexuality, and its increased prevalence can be directly traced to Kinsey." Here again is an instance where a preface (especially to a later edition) might be embodied in the book proper, or added as a suffix.

The portions of the book which might prove to be more readily understood and accepted generally were those in which the 20 fallacies and misconceptions about "impotence" and the 20 concerning "frigidity" were stated and briefly discussed. The 20 questions asked in the initial interview in each of these two conditions seemed very pertinent—they might well be used by any physician who is interested in understanding and helping in these situations. (Why so many "20's"? Maybe it is a nice, round figure.)

The results obtained by psychoanalytic therapy in the experience of the author seemed very good, even when the factors of (1) voluntarily entering treatment, (2) continued treatment without interruption and for a sufficient period of time, and (3) depth of regression are considered. It would be interesting to know: in what percentage of all cases seen were these qualifications met and maintained?

This book was certainly provocative and, in spots, useful information was gleaned.

W. G. Morehouse, M. D.

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*Peritoneo-Pericardial Diaphragmatic Hernia.* Karl M. Lippert (Columbia) Ann. Surg. 148:798 (Nov. 1958)

A peritoneo-pericardial diaphragmatic hernia is one in which there is a defect in the diaphragm through which the peritoneal and pericardial cavities communicate. The origin of this type of hernia may be congenital or traumatic. It is diagnosed with difficulty and is rarely differentiated from other diaphragmatic hernias. Definitive treatment of this condition is surgical via a thoracic approach. A case is reported in which there had apparently been an extensive tear in the diaphragm by indirect trauma and the patient received other multiple injuries consisting of a comminuted fracture of the pelvis, head injury, and a ruptured bladder. The diaphragmatic tear involved a portion of the left leaf of the diaphragm, the pericardial area and the right leaf of the diaphragm. Omentum, large and small intestine and a portion of the liver were found to have encroached on the pericardial cavity. Surgical repair of the diaphragm was achieved after reduction of abdominal viscera. The postoperative recovery was uneventful. This case report is added to the 13 other similar cases found after careful search of the literature and an analysis of the cases is made.

K. M.

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*Trends in Maternal and Child Health.* Hilla Sheriff, M. D. (Columbia) J. Am. Diet. A. 34:1304 (Dec. 1958)

Despite what has been done for maternal and child health in this country, there is a gap between what we are doing today and what needs to be done. We must do even more to keep pace with the changes that are occurring with breath-taking rapidity. What measures will be used to safeguard children in the future, or even what we must safeguard them against, no one can know.

For the immediate future we know that some of our current trends will be carried on, that some of our present knowledge will be of use, and that some of our wisdom can still be translated into action. "We are building on an age-old wisdom that recognizes the need of the child for his parents, and the security of a home to which he unquestionably belongs. Today we have new knowledge flowing from the social and biological sciences which helps guide us in the adjustment of conditions forced upon us and our children by all the modern ways of life.

"Each new generation brings its own problems—problems which require new approaches, new inventiveness, new counter measures, and above all new knowledge and greater skill on the part of adults."

The benefits for our children to be derived from the newer trends on which I have barely touched, as well as tired and true older trends, represent a real investment in the future of our country—indeed in the future of the world, for children *are* the future.

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We are very much disturbed about the horses on television. We have neglected our work to watch Western after Western on TV. We have galloped through town after town in pursuit of the bad guys, through Main street after Main street.

We have never seen such clean streets, and we have seen not one responsible hokeypokey man. Is there something wrong with those horses?

*Worcester Medical News*

IN DEBILITATING DISEASE

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Compared to control patients, those receiving Nilevar (brand of norethandrolone) have repeatedly demonstrated more rapid and more complete recovery from serious acute illness and increased comfort and well-being in chronic illness.

A multitude of case histories are now adding individual clinical color to the earlier controlled investigations which defined the actions of Nilevar as an effective aid in reversing negative nitrogen balance and in building protein tissue.

In typical case reports such gratifying comments as these appear:

**Underweight**—"Appetite considerably increased within one week. Sense of well-being and vigor increased along with increased appetite."

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**Third Degree Burn**—". . . soon began eating all that was offered. . . . Began to show signs of hope for recovery. . . . Perhaps one of the greatest changes was in the appearance of his wounds which were so very much improved."

The dosage for adults is 20 to 30 mg. daily in single courses no longer than three months. For children the daily dosage is 0.5 mg. per kilogram of body weight, in single courses no longer than three months.

Nilevar is supplied in tablets of 10 mg., ampuls of 25 mg. (1 cc.) and Nilevar Drops of 0.25 mg. per drop.

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SEARLE

## GREENVILLE POST-GRADUATE SEMINAR

The annual Greenville Post-Graduate Seminar will be held on April 14, 15 and 16 of 1959. The speakers which will be heard on this program will include

1. Dr. Edgar Hull, Professor of Medicine at L. S. U., New Orleans
2. Dr. Peter Gazes, Department of Medicine, Medical College of South Carolina, Charleston
3. Dr. Claude Frazier, Asheville, North Carolina
4. Dr. Benjamin Manchester, George Washington University, Washington, D. C.
5. Dr. Edwin Boyle, Medical College of South Carolina, Charleston
6. Dr. Bob Bowman, Johnson City, Tennessee
7. Dr. J. Lamar Calloway, Duke University, Durham, North Carolina
8. Dr. John Parks, Dean of George Washington University, Washington, D. C.
9. Dr. Fred Kredel, Medical College of South Carolina, Charleston
10. Dr. R. A. (Daddy) Ross, University of North Carolina Medical School, Chapel Hill, North Carolina
11. Dr. R. A. Greenblatt, University of Georgia, Augusta, Georgia
12. Dr. Arthur Siegling, Medical College of South Carolina, Charleston
13. Dr. John Cuttino, Medical College of South Carolina, Charleston

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